PUBLIC HEALTH REPORTS

In this issue

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frontispiece

Recently completed Entomological Research Center of the Florida State Board of Health at Vero Beach, Fla.

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PUBLIC HEALTH REPORTS

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
MARION B. FOLSOM, *Secretary*

PUBLIC HEALTH SERVICE
LEONARD A. SCHEELE, *Surgeon General*

Several agencies interested in rural development pool their experience to accelerate a program to install water systems for Tennessee Valley farmers.

Combined Efforts Stimulate Development of Rural Water Systems

By C. H. WEAVER, B.S., C. T. ROBERTS, and C. M. DAVIDSON, C.E., M.P.H.

FARM WATER supplies under pressure are practically nonexistent in many localities in the southeastern United States. In the Tennessee Valley, an estimated 25 percent of rural families had such water supplies in 1953.

Since that time an accelerated rural water system program has been developed in the Tennessee Valley, based on cooperation among the various agencies concerned with the health and welfare of rural people.

Cooperating have been State and county health departments, county and home demonstration agents, vocational agriculture groups, local power systems which retail electricity, and the Tennessee Valley Authority, a Federal agency with interests in many phases of regional development.

These agencies have combined their efforts in order to (*a*) improve rural sanitation and health; (*b*) encourage more farm people to have a safe, dependable water supply; and (*c*) improve rural living generally through the many improvements that running water under pressure makes possible.

The present cooperative program is based on ideas developed by the Mississippi State Board of Health through an experience in Winston County, Miss., and by the TVA in the Chestuee watershed area of eastern Tennessee.

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The Chestuee Experience

A low percentage of the 854 farms in the Chestuee area had pressure water systems when a program to inform the farm people about the advantages of safe and dependable water supplies was initiated. TVA agricultural and sanitary engineers, working with county agents in three counties and with health department sanitarians, called on farmers to discuss water supply, taking along demonstration electric pump equipment.

Then the county sanitarians and TVA agricultural engineers held four rural community water systems demonstrations on farms where water systems were actually being installed. Sanitarians planned the well location and the waste disposal system. Agricultural engineers assisted with technical data on pump size and other factors. Together they showed the farmers how to install a pressure water system which would assure an adequate safe supply of water.

Later, a 1954 survey showed that 250 farms, 30 percent of the total, had pressure water systems. Another 143 farm families said they wanted such systems soon. From the Chestuee experience, these two ideas were gained:

1. Cooperation among several groups interested in rural water supply, particularly health departments and local power systems, is the key to effective work in this field.

2. Personal calls on farmers are particularly successful in encouraging utilization of safe, adequate water supplies.

Winston County Experience

In the spring of 1954, the sanitarian of Winston County, Miss., with the aid of the Mississippi State Board of Health, conducted a rural sanitation survey in his county. The survey was aimed at obtaining general information about water supply, excreta disposal, and screening of doors and windows. The sanitarian used the Agricultural Stabilization Committee's mailing list and received 600 replies from 2,300 survey sheets sent out.

One of the questions asked was, "Do you wish the sanitation supervisor to visit your place to help you with your problems?" Three hundred seventy-five answered in the affirmative, and 380 visits were made. As a result, 112 wells were protected, 62 new pressure water systems were installed, and 102 septic tanks were installed or improved.

The Winston County survey was a success, but it proved to be too expensive for a county health department since no funds are budgeted for this type of survey in Mississippi county health departments. Too, the Agricultural Stabilization Committee's mailing list proved to be out of date.

Collective Effort in Mississippi

Early in 1954, the Mississippi State Board of Health and local health departments were developing plans for a more intensive approach to rural sanitation problems in Mississippi.

TVA's Electrical Development Branch, which works with local distributors of TVA-generated electricity, is interested in improving farm living through the improved use of electricity. TVA's Division of Health and Safety has a variety of interests directed toward the problem of rural sanitation. The rural electric power associations in northeastern Mississippi want to encourage more widespread use of pressure water systems, which in turn lead to the benefits of electric water heating, automatic home laundries, and other electrical conveniences. Other groups, including vocational agriculture teachers, extension service representatives, and the colleges and universities, are concerned with improved farm living, increased farm production, and farm sanitation. Pump dealers are natural allies in this field.

These groups joined in a program to improve rural sanitation and to encourage more use of electrically powered pressure water systems on farms. The program was built around the ideas developed in Winston County, Miss., and in the Chestuee area of eastern Tennessee, namely, (*a*) cooperation among all interested agencies, (*b*) personal calls and home visits to farmers, (*c*) the questionnaire survey, and (*d*) group demonstrations. Two main activities were included:

1. A postcard survey of rural people was conducted, followed by personal calls at the farms of those persons who requested such visits from the health department and the rural power association.

2. A series of 1-day workshops on pressure water systems and sanitation was carried out. The workshops were a cooperative effort of the county health departments, the Mississippi State Board of Health, local power associations, the vocational agriculture department of the State department of education, the extension service, and TVA.

The Survey

County sanitarians and local power associations worked out a postcard questionnaire with these questions:

1. Is your water supply from a dug, bored, driven, or drilled well or from a spring or cistern?

2. Do you get water from its source by a pitcher, handforce, or electric pump or by rope and bucket?

3. Is your well protected by a concrete slab?

Concrete is utilized in Monroe County, Miss., to protect well from surface water contamination.

If a spring is used, is it protected from surface drainage?

4. Do you own your farm? If not, whose farm do you live on?

5. Would you like someone who could give you information on these items of sanitation to visit your home?

Such a postcard questionnaire was sent out by seven power associations in northeastern Mississippi.

Of the 24,568 farm families which received these cards, 9,103, or about 37 percent, have thus far returned them. Of the families returning the cards, nearly half (4,254) have requested a visit from the health department and the power association. Home visits made total 3,480. Of these 1 out of 5 have installed pressure water systems, and 22 percent have protected their water supplies by sealing and concreting.

Now the idea has spread to rural electric systems in northern Alabama, where 2 surveys have been started, and in Tennessee, where 6 surveys are in process. These 8 surveys will reach 50,000 farm families.

To encourage rural people to return the survey cards, local pump dealers and other businessmen offered prizes. A drawing was held from the returned survey cards, this drawing often being made at a public gathering where representatives of the health department and the power association made brief talks on pressure water systems and rural sanitation. The survey cards, in addition to giving valuable information about water supply and sanitation conditions, have presented the health department and the power associations with an invitation to visit thousands of farm homes to discuss sanitation.

Calls are made first on those persons who actually indicate on the survey card that they want a visit. Next, other persons surveyed are contacted. The general pattern has been that the county sanitarian and the power association's agricultural engineer have made the first few farm visits together. Then they have divided the remaining calls. The sanitarian is especially qualified to give advice and answer questions about rural sanitation; the agricultural engineer is trained to handle inquiries about the selection and installation of pressure water systems. But in working together each of these specialists learns much about the other's work.

Water System Workshops

After the surveys were under way, it was decided that a series of water system workshops in various parts of northeastern Mississippi would be held to give detailed information on pressure water systems and sanitation to field workers from the several interested agencies. This was essentially a matter of "teaching the teachers," since those invited included county sanitarians, other local and State health officials, vocational agriculture teachers, teachers of veterans' classes, extension service workers, county agents, and power association personnel.

Those making talks included agricultural engineers from power associations and TVA, representatives of the health departments, the extension service, and the agricultural education department.

In addition to lectures, there were demonstrations to teach the agricultural and health workers as much as possible about running water on the farm. At each meeting there were trailers equipped with different types of electric pumps. The pumps had moving parts exposed so their operation could be easily explained. Other equipment included a telescoping tower which was used to demonstrate the effect of elevation on pump efficiency. By raising a pump

to the top of this tower, the lecturer was able, in effect, to put the audience at the bottom of a well.

Subjects covered were:

- Water-supply protection and sewage disposal.
- Fundamentals of water systems.
- Selection of pneumatic tanks.
- Types of air volume controls and their correct use.
- Plastic pipe and its correct application.
- Pump location, housing, and protection.
- Selecting the pump with the necessary capacity and calculating suction lift and discharge head.
- Planning the farmstead distribution system.

Demonstrations presented were:

- Effects on pump operation of increasing suction lift and discharge pressure and of elevation of the pump.
- Airlogging and waterlogging of pneumatic tanks.
- The submersible pump.
- Pipe friction in various kinds of pipe.
- Wiring and motor protection.

In addition, each person at each workshop received a folder with some 20 pieces of literature on pumping equipment and pump installation.

Fifteen of these intensive 1-day workshops were held in Mississippi, with more than 350 leaders attending. One meeting was held at Mississippi State College, another at a Future Farmers of America camp, and the remainder at vocational agriculture departments of high schools.

Results

Perhaps the main benefit of this coordinated activity has been the establishment of effective day-to-day working relationships among the various participating agencies. While all of these agencies have a common interest—improvement of rural living—each individual agency has specialized fields of interest which contribute to achieving this goal of better rural life. It is the concentration of all these specialized talents on one particular aspect of rural life—the problem of sanitation and the general benefits of pressure water systems—that seems to stand out as a major accomplishment.

It is too early to evaluate completely the effects of this activity on rural sanitation in northeastern Mississippi. This is obviously a long-range program, one which requires constant effort for a number of years. It requires followup calls and renewed activity each year. The program is not yet complete, and further results will be seen.

However, some facts are available, based on a study of 21 counties in northeastern Mississippi. This study, made from reports of sanitarians in these counties, shows the following results during the calendar year 1954.

1. Of all pressure water systems installed in the 21 counties in 1954, approximately 50 percent were installed in the 3 counties where the postcard survey was made on a countywide basis. Another 27 percent of the pressure water systems were installed in 5 other counties where the postcard survey was made in 10 to 25 percent of the county. In the remaining 13 counties, only 23 percent of the total pressure water systems were installed. Thus, more than three-fourths of the pressure water systems installed in these 21 counties in 1954 were in the 8 counties where the survey was made in all or part of the county; less than one-fourth of the pressure water systems were installed in the other 13 counties.

2. The statistics on installation of protected water supplies is even more impressive. In many cases, the sanitarian, who made a call to a farm after the postcard survey, found that improvements in the protection of farm water supply had already been made—in the interval between the farmer's mailing back the postcard and the visit of the sanitarian.

In the matter of protecting water supply, 55 percent of the improvements came in the 3 counties where complete countywide postcard surveys were made. Another 27 percent of improvements were in the 5 counties where surveys were made in part of the county. The remaining 13 counties produced only 18 percent of the improvements in protection of water supplies in 1954. Thus, the 8 counties where the survey was made in all or part of the county received 82 percent of the improvements in water supply protection, and the other 13 counties had only

18 percent. As a matter of fact, there were 59 percent more individual protected water supplies installed in just one of the completely surveyed counties than in all of the 13 non-surveyed counties combined.

These figures indicate clearly that concentrated efforts on improved sanitation and increased use of pressure water systems will show definite results when the talents of several cooperating groups are focused on this problem.

The spread of this approach to other areas was inevitable. Already several power systems in Tennessee and Alabama are working with local health officials and other groups on such a program. The Communicable Disease Center, Public Health Service, made a special request to have the water systems workshops program presented at two 1-day sessions near Atlanta, Ga. These workshops were enthusiastically received by those present.

More definite results will be available at a later date. Thus far, however, it seems certain that the program in northeastern Mississippi has done more to stir up interest in improved rural sanitation than any other approach to the problem.

1955 Water Supply Inventory

More than 52 million people in communities of 25,000 and over now depend on surface sources for their daily water supplies as compared with fewer than 40 million in 1948. The 1955 inventory of the Nation's water supplies also revealed that less than 1 percent of the population in such communities use untreated water.

The inventory was compiled by the Public Health Service Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, from data provided by State and local health departments.

Water supply inventories, 1948 and 1955

Item	*1948*	*1955*
Number of communities with population of 25,000 and over with public water supply	422	570
Census population of these communities	[1] 53, 212, 143	[2] 63, 954, 905
Population served by these communities	61, 864, 210	82, 647, 716
Ownership		
Public:		
Number	335	435
Percent	79. 4	76. 3
Private:		
Number	58	98
Percent	16. 1	17. 2
Public and private:		
Number	13	2
Percent	3. 1	. 4
Unreported:		
Number	6	35
Percent	1. 4	6. 1
Supply source		
Ground:		
Number	91	129
Percent	21. 6	22. 6
Population served	6, 805, 670	11, 052, 764
Percent	11. 0	13. 4
Supply source—Con.	*1948*	*1955*
Surface:		
Number	276	339
Percent	65. 4	59. 5
Population served	39, 678, 185	52, 501, 026
Percent	64. 1	63. 5
Ground and surface:		
Number	55	102
Percent	13. 0	17. 9
Population served	15, 380, 355	19, 093, 962
Percent	24. 9	23. 1
Water status		
Treated:		
Number	392	548
Percent	92. 9	96. 1
Population served	52, 185, 360	81, 247, 494
Percent	84. 4	98. 3
Untreated:		
Number	12	14
Percent	2. 8	2. 5
Population served	682, 270	714, 844
Percent	1. 1	. 9
Treated and untreated:		
Number	18	8
Percent	4. 3	1. 4
Population served	8, 996, 580	685, 378
Percent	14. 5	. 8

[1] 1940 census. [2] 1950 census.

Mental Patient Data for Fiscal Year 1955

ON THE BASIS of summary data submitted to the National Institute of Mental Health of the Public Health Service by the various State mental hospital systems for fiscal year 1955, figures in basic categories show a substantial increase over the year before.

Item	*1954*	*1955*	*Percentage increase*
First admissions	121,430	123,771	1.9
Readmissions	50,252	55,158	9.8
Discharges	115,796	118,532	2.4
Deaths in hospitals	42,652	44,488	4.3
Resident patients at end of year	553,979	560,576	1.2
Personnel employed full time at end of year	138,053	145,032	5.1
Maintenance expenditures:			
Total	$569,490,492	$622,603,423	9.3
Average per capita	$1,038.62	$1,119.06	7.7

Heretofore there has been a considerable time lag in publishing mental health statistics. Since data are needed on an up-to-date basis, public mental hospitals were asked on recommendation of mental hospital statisticians in their fifth annual conference, May 1955, to provide certain basic figures after the close of each year: first admissions, readmissions, total discharges from the hospitals and deaths in the hospitals during the year; average daily resident population; resident patients and total personnel employed full time at the end of the year; and total maintenance expenditures for patients.

The National Institute of Mental Health made the survey in October 1955.

It was realized that final and complete data might not be available because of variation in reporting procedures and fiscal year-ending dates. Therefore, the hospitals were requested, if the answers to any or all of the items were unknown at the time of the survey, to enter their best estimates. However, some hospitals found it impossible either to report any estimate for a given item or to report at all. Since these data were to provide some measure of the extent of hospitalization in State and county hospitals for mental disease and the psychopathic hospitals, the institute attempted to provide rough estimates of the missing data. This was done in one of three ways:

1. If one or two requested items were not available and all other items were supplied, estimates of the missing 1955 data were made by extrapolation, using the 1953 and 1954 census figures.

2. If some hospitals within the State reported and some did not, the 1954 data from the census of mental patients were used for hospitals not reporting.

3. If no report was made for a State in the survey, the 1954 census data were used.

The table shows figures for each State and the type of estimation procedure used.

This special Public Health Service report was made by the Hospital Reports and Records Unit, Current Reports Section, Biometrics Branch, National Institute of Mental Health, Bethesda, Md. The unit is interested in comments on the report and its continuation.

Special report on mental patients in public hospitals for mental disease, fiscal 1955

State	First admissions	Readmissions	Discharges	Deaths in hospital	Resident patients, end of year	Average daily resident patient population	Total full-time personnel, end of year	Maintenance expenditures	
								Total	Per capita [1]
Totals	123, 771	55, 158	118, 532	44, 488	560, 576	556, 364	145, 032	$622, 603, 423	$1, 119. 06
Alabama	[2] 1, 417	[2] 625	[2] 1, 131	[2] 428	[2] 7, 209	[2] 7, 151	[2] 1, 212	[3] 4, 778, 285	668. 20
Arizona	680	265	1, 074	156	1, 690	1, 701	504	2, 086, 106	1, 226. 40
Arkansas	1, 600	686	1, 900	338	5, 086	5, 017	1, 398	4, 528, 186	902. 57
California	[2] 12, 064	[2] 5, 455	[2] 14, 153	[2] 2, 836	[2] 37, 317	[2] 36, 497	[2] 9, 343	[2] 44, 825, 771	1, 228. 20
Colorado	1, 207	400	1, 292	518	5, 720	5, 714	1, 876	7, 316, 692	1, 280. 49
Connecticut	2, 418	1, 436	3, 103	955	8, 694	8, 958	2, 968	[4] 14, 108, 591	1, 574. 97
Delaware	[2] 660	[2] 304	[2] 674	[2] 202	[2] 1, 808	[2] 1, 762	[2] 686	[2] 2, 459, 573	1, 395. 90
District of Columbia	1, 022	327	748	502	7, 285	7, 216	2, 563	13, 634, 554	1, 889. 49
Florida	1, 748	474	200	514	8, 026	7, 912	2, 046	6, 971, 537	881. 13
Georgia	2, 878	684	2, 480	858	11, 701	11, 582	1, 926	9, 639, 192	832. 26
Idaho	713	383	891	124	1, 211	1, 260	327	1, 426, 063	1, 131. 80
Illinois	8, 290	4, 703	9, 669	3, 509	37, 883	38, 001	8, 405	37, 715, 662	992. 49
Indiana	2, 822	1, 237	2, 214	759	11, 120	10, 765	3, 668	13, 513, 547	1, 255. 32
Iowa	1, 500	1, 186	2, 048	473	5, 251	5, 395	1, 774	[4] 6, 273, 756	1, 162. 88
Kansas	1, 040	474	1, 046	288	4, 420	4, 462	2, 090	7, 660, 225	1, 716. 77
Kentucky	1, 396	1, 002	1, 719	593	7, 700	7, 689	1, 497	5, 026, 937	653. 78
Louisiana	2, 081	696	1, 909	424	8, 290	8, 184	1, 883	5, 926, 021	724. 10
Maine	534	264	504	258	2, 996	2, 983	800	3, 198, 821	1, 072. 35
Maryland	[2] 2, 387	[2] 1, 053	[2] 2, 452	[2] 720	[2] 9, 599	[2] 9, 511	[2] 2, 580	[2] 11, 279, 506	1, 185. 94
Massachusetts	6, 515	1, 951	6, 224	2, 393	23, 302	23, 195	7, 119	32, 396, 007	1, 396. 68
Michigan	3, 142	1, 486	2, 519	1, 451	21, 788	21, 441	6, 261	32, 023, 989	1, 493. 59
Minnesota	2, 915	1, 464	3, 025	1, 002	11, 449	11, 524	2, 862	12, 688, 145	1, 101. 02
Mississippi	1, 905	1, 560	2, 406	346	5, 295	5, 296	1, 381	3, 856, 231	728. 14
Missouri	1, 346	475	1, 283	692	12, 046	12, 092	2, 857	10, 661, 817	881. 72
Montana	[3] 618	[3] 160	[3] 584	[3] 198	[3] 1, 958	[3] 1, 942	[3] 446	[3] 1, 800, 898	927. 34
Nebraska	963	881	709	411	4, 826	4, 806	1, 800	5, 511, 654	1, 146. 83
Nevada	207	30	173	47	440	429	91	474, 819	1, 106. 80
New Hampshire	666	274	623	274	2, 720	2, 703	861	3, 572, 007	1, 321. 50
New Jersey	5, 089	2, 068	4, 277	2, 502	22, 262	22, 257	7, 455	28, 389, 142	1, 275. 52
New Mexico	439	458	850	97	1, 067	1, 087	412	1, 378, 817	1, 268. 46
New York	16, 371	5, 996	10, 163	8, 160	96, 729	95, 890	24, 305	118, 761, 495	1, 238. 52
North Carolina	2, 301	965	2, 522	445	10, 788	9, 913	2, 733	10, 074, 051	1, 016. 25
North Dakota	541	236	340	127	1, 993	2, 022	461	1, 939, 268	959. 08
Ohio	7, 191	2, 987	7, 682	2, 044	28, 663	28, 367	7, 453	29, 562, 280	1, 042. 14
Oklahoma	1, 239	860	1, 273	520	8, 014	7, 919	2, 068	6, 584, 482	831. 48
Oregon	1, 991	828	1, 992	530	4, 906	4, 818	1, 264	5, 107, 050	1, 059. 99
Pennsylvania	5, 499	2, 209	3, 639	2, 813	40, 920	40, 448	10, 721	44, 753, 492	1, 106. 45
Rhode Island	898	488	909	400	3, 442	3, 422	790	3, 199, 733	935. 05
South Carolina	1, 727	556	1, 594	382	6, 038	5, 966	1, 245	4, 764, 533	798. 61
South Dakota	[3] 430	[3] 198	[3] 643	[3] 152	[3] 1, 595	[3] 1, 696	[3] 473	[3] 1, 521, 821	897. 30
Tennessee	1, 885	1, 197	2, 300	537	8, 370	8, 531	1, 244	4, 992, 914	585. 27
Texas	3, 835	1, 437	4, 220	976	16, 445	16, 466	3, 637	14, 917, 354	905. 95
Utah	[3] 308	[3] 113	[3] 258	[3] 106	[3] 1, 359	[3] 1, 342	[3] 380	[3] 1, 384, 322	1, 031. 54
Vermont	348	167	374	125	1, 294	1, 290	343	1, 387, 096	1, 075. 27
Virginia	2, 276	1, 510	2, 290	813	11, 303	11, 067	2, 442	9, 257, 022	836. 45
Washington	1, 591	771	1, 682	743	7, 361	7, 496	1, 823	7, 827, 415	1, 044. 21
West Virginia	[2] 1, 701	[2] 677	[2] 1, 736	[2] 399	[2] 5, 545	[2] 5, 495	[2] 1, 054	[2] 3, 667, 045	667. 34
Wisconsin	3, 194	1, 407	2, 864	1, 270	15, 013	15, 036	3, 364	17, 208, 599	1, 144. 49
Wyoming	[3] 183	[3] 95	[3] 171	[3] 78	[3] 639	[3] 648	[3] 141	[3] 570, 900	881. 02

[1] Per capita maintenance expenditure was computed by dividing total maintenance expenditure by the average daily resident patient population in each State.

[2] Estimated by using data reported in the 1954 census of mental patients for those hospitals not supplying the special survey data for 1955 and using the 1955 survey data for those hospitals which did report.

[3] Estimated by using data reported for the 1954 census of mental patients since the hospitals in the State did not report in the special survey for 1955.

[4] Estimated by applying, where required, the percentage change reported for similar data in the 1953 and 1954 census of mental patients to the 1954 figure since the hospitals in the State concerned did not supply the item requested.

NOTE: These data are provisional and subject to change. Public hospitals include the State and county hospitals for mental disease and the psychopathic hospitals.

World Health Day
April 7, 1956

"Destroy Disease Carrying Insects"

Many diseases cannot be spread without insect vectors. They are among the most ancient afflictions of mankind and have played their part in shaping his history. Malaria has influenced the rise and fall of civilizations. Epidemics of plague and of yellow fever have again and again decimated populations in the old and the new worlds, while outbreaks of louseborne typhus have often determined the outcome of military campaigns. Sleeping sickness and the less well-known disease onchocerciasis have held back progress on the African continent.

These and a score of other diseases carried by flying and crawling insects have enfeebled whole sections of the human race, depopulated fertile food-producing tracts, and held down man's levels of living particularly in the tropics but also in temperate climates. Despite the strides that have been made in our own day towards the control of many of these scourges, there is scarcely one which does not still represent an actual or potential danger to large numbers of human beings.

Most of these diseases have been known and feared for centuries, but it was only in the early years of the present century that painstaking research established with certainty the part of many different species of insects, such as mosquitoes, tsetse flies, sandflies, fleas, and lice, as well as of ticks, and mites, in transmitting a great number of pestilences.

In the first flush of enthusiasm following these discoveries it was thought that, once the carrier was known, any disease would be virtually conquered.

Indeed, in a relatively short time yellow fever was banished from most of the cities of the Americas. The incidence of malaria was reduced particularly in the towns and in the more temperate zones, and certain other diseases were successfully attacked.

Rapid progress, however, became possible only after the discovery during World War II of the "residual" insecticides, of which the best known probably is DDT. The special character of these chemicals is that they remain deadly for periods ranging up to several months after application. One of their first triumphs was to strangle the threat of typhus epidemics during and after the war. Next, they proved amazingly effective when correctly used to control malaria, even in the sparsely settled rural districts. There is scarcely an insectborne disease against which these new chemicals are not being used today with greater or less effect.

But again disappointment has followed too optimistic hopes. First, the common housefly and now some mosquitoes as well as lice, cockroaches, and bedbugs in certain areas have shown that, after a few years of exposure, they can develop resistance which protects them from fatal effects. For the housefly, resistance occurs rather quickly, and these chemicals have therefore become of little value. With the mosquito, however, the insecticides can be used effectively for several years. During this period an all-out campaign can eradicate diseases such as malaria.

It would be a serious mistake to underestimate insectborne diseases. It is already clear that the residual insecticides, powerful weapons though they be, do not provide the final answer to the disease-carrying insect.

World Health Day this year will, I hope, serve to make people everywhere realize that, although the insectborne diseases are being increasingly held in check, they are not yet conquered. To achieve that final victory, man will need all his intelligence and resourcefulness. Above all, he will need to act in concert, for this group of diseases constitutes one of the greatest challenges to international health action.

—By M. G. Candau, M.D., *Director-General, World Health Organization* (abridged statement).

Urinary Excretion of Fluoride Following Defluoridation of a Water Supply

By R. C. LIKINS, D.D.S., F. J. McCLURE, Ph.D., and A. C. STEERE, B.S.

PREVIOUS studies have shown that essentially all absorbed fluoride is eliminated in the urine or deposited in skeletal and dental tissues (*1–3*). That all fluoride deposited in the skeleton is not fixed irreversibly is shown by its mobilization following a reduction in fluoride intake (*1*, *3–9*). Brun and his associates (*4*) reported that men who had absorbed fluoride from cryolite dust maintained a high level of fluoride in the urine for as long as 7 years following the period of exposure. Similarly, Largent and Heyroth (*3*) and Largent (*5*) found that urinary excretion of fluoride in excess of the intake continued at a progressively decreasing rate for as long as 2 years after the ingestion of large amounts of fluoride. Blakemore and his co-workers (*6*) observed that in cattle the fluoride content of the urine remained high for some time after they had foraged on pastures contaminated with industrial fluoride dust. Direct evidence of the withdrawal of fluoride from bone has been obtained in cattle (*6*) and in rats (*7–9*).

It was not ascertained by these studies whether or not any factors in association with a reduction in fluoride intake influenced the mobilization of fluoride. It may be surmised, however, that variations in the metabolic activity of skeletal tissue due to age could alter the process. In support of this assumption there is extensive evidence that the degree of skeletal maturation affects the deposition and retention of ions other than fluoride normally present in calcified tissues (*10*).

The purpose of the present study was to investigate the relationship of age to the rate of mobilization of fluoride in a human population group exposed to an excessive amount (8 p.p.m.) of waterborne fluoride.

The authors are with the Laboratory of Oral and Biological Chemistry, National Institute of Dental Research, Public Health Service. Dr. Likins is engaged in research pertaining to mineral metabolism and the chemistry of calcified tissue. Dr. McClure, who has been studying fluoride and dental caries for many years, is chief of the laboratory. Mrs. Steere, a biologist, is assisting in the laboratory's research projects.

Organization of the Study

For more than 50 years before defluoridation was begun on March 10, 1952 (*11*), the communal water supply of Bartlett, Tex., contained 8 p.p.m. fluoride. Since this date the fluoride in the water has been maintained at approximately 1 p.p.m.

One hundred and sixteen white males who had used the Bartlett water supply for at least 2 years immediately prior to defluoridation and who were currently drinking Bartlett water composed the study population. Their numerical distribution according to age group, to-

Table 1. Age distribution of the study group and exposure to 8 p.p.m. fluoride in drinking water

Age group (years)	Number of persons	Number of years of exposure		
		Maximum	Minimum	Mean
7	9	7	7	7
8	7	8	2	6
9	6	9	2	6
10	9	10	4	7
11	4	11	4	9
12	5	12	6	10
13	7	13	2	9
14	3	14	5	11
15	9	15	9	13
16	6	16	7	12
20–29	8	20	5	12
30–39	7	28	4	11
40–49	13	47	8	26
50–59	7	57	4	32
60–69	7	50	4	30
70 and over	9	50	4	34

gether with data relative to duration of exposure to the untreated water, is shown in table 1.

On the day defluoridation was begun (which was, of course, before the defluoridation process had changed the fluoride content of the water supply) and at intervals thereafter during the next 113 weeks, a spot urine specimen was obtained from each person in the study. Aliquots of the specimens were pooled by age groups and analyzed for fluoride by standard procedures (*12*, *13*), with calcium hydroxide (1 gm. per 100 ml. urine) employed as the fluoride fixative.

Results

The mean daily fluoride content of the treated water in Bartlett during the period of observation was 1.32 p.p.m. The average fluoride content for each month is given in table 2.

The urinary fluoride values for each age group appear in table 3, and the means for all children, ages 7 through 16, and all adults, ages 20 and over, are shown in the chart. This division of the study population into children and adults was based on the fact that skeletal maturation is complete by approximately 18 years of age (*14*).

On the day defluoridation was begun, the fluoride content of the urine samples ranged from 5.0 to 9.2 p.p.m. and averaged 6.5 p.p.m. in children and 7.7 p.p.m. in adults. One week later, the water contained 0.7 p.p.m. fluoride, and the mean concentration of urinary fluoride had decreased to 4.9 p.p.m. in children and 5.1 p.p.m. in adults. After 5 weeks the mean urinary fluoride concentration remained unchanged in children but had decreased to 3.9 p.p.m. in adults. No further changes were apparent at the end of 9 weeks and 20 weeks, but the fluoride content of the urine had decreased in both children and adults after 39 weeks. After 113 weeks, the average concentration of fluoride in the urine was 2.2 p.p.m. in children and 2.5 p.p.m. in adults.

Discussion

It has been shown that persons whose drinking water contained 0.5 to 5.1 p.p.m. fluoride excreted fluoride in the urine approximately equal in concentration to that in the drinking water (*15*). On the basis of this evidence, the urine of the Bartlett residents would be expected to contain 1.0–1.5 p.p.m. of fluoride following defluoridation of their drinking water. The fact that the urinary concentrations of fluoride considerably exceeded these expected

Table 2. Average monthly concentrations of fluoride (p.p.m.) in the water supply of Bartlett, Tex., after defluoridation

Year	January	February	March	April	May	June	July	August	September	October	November	December
1952			1.75	0.98	1.08	1.28	1.50	1.46	1.30	1.74	1.41	1.23
1953	1.13	1.08	1.26	1.17	1.09	1.39	1.48	2.13	1.27	1.14	1.30	1.36
1954	1.16	1.43	1.24	1.25	1.06							

values agrees with previous reports that urinary excretion of fluoride continued to be high after a marked reduction in the fluoride intake. It also indicates that fluoride is being mobilized from the skeletal tissues of the Bartlett residents.

There was no apparent correlation of age with urinary excretion of fluoride within either the group 7 through 16 years of age or the group aged 20 years and over. When the mean fluoride values for these two groups are compared, however, it will be noted that during the first 20 weeks the urinary excretion of fluoride decreased somewhat less precipitously in children than in adults. This finding suggests that the degree of mobilization of skeletal fluoride was somewhat greater in children than in adults during this period.

It has been suggested that the withdrawal of fluoride from bone can be attributed to (*a*) exchange phenomena in which fluoride ions on the surface of the apatite crystals exchange with hydroxyl ions in the extracellular fluids and (*b*) to the basic resorption-deposition cycle of the skeleton (*16*). Since this latter process is identified with bone growth and reconstruction, it seems probable that exchange is the principal mechanism concerned in the mobilization of fluoride from the mature skeleton. On this basis the initial rapid decrease in the urinary concentration of fluoride in adults presum-

Fluoride content of water and urine at specified intervals after defluoridation of the water supply in Bartlett, Tex.

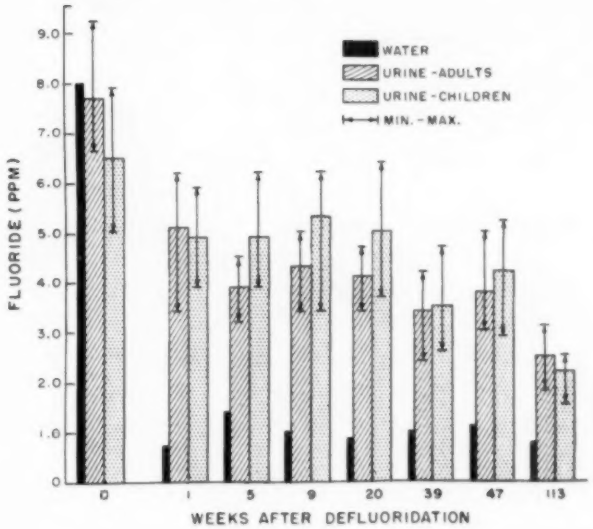

Table 3. Fluoride content of urine (in p.p.m.) for specified age groups after defluoridation of drinking water

Age group (years)	Number of weeks after defluoridation							
	0 (Mar. 10, 1952)	1 (Mar. 17, 1952)	5 (Apr. 14, 1952)	9 (May 15, 1952)	20 (July 25, 1952)	39 (Dec. 9, 1952)	47 (Feb. 4, 1953)	113 (May 11, 1954)
7	6.9	3.9	4.6	5.3	3.9	3.9	4.0	2.5
8	5.5	5.0	4.9	6.2	5.6	2.6	4.8	2.2
9	5.6	4.5	3.9	3.4	4.3	2.9	3.0	2.2
10	6.1	4.3	4.2	4.9	4.8	3.5	4.0	2.1
11	7.2	5.1	5.0	5.4	6.4	3.0	4.2	2.4
12	7.9	5.1	5.0	6.0	4.8	3.5	3.9	2.1
13	6.1	5.2	5.5	5.7	5.3	4.7	5.2	2.0
14	7.7	4.8	6.2	5.2	3.7	4.0	5.0	1.5
15	7.1	5.9	4.8	5.5	5.3	3.2	3.8	2.5
16	5.0	4.7	4.7	5.6	5.7	3.8	3.7	2.1
Average	**6.5**	**4.9**	**4.9**	**5.3**	**5.0**	**3.5**	**4.2**	**2.2**
20–29	6.8	3.4	3.8	4.1	4.0	3.6	3.5	2.7
30–39	8.2	4.4	3.3	3.4	3.7	3.2	3.4	1.8
40–49	9.2	5.7	4.5	5.0	4.7	4.2	----	2.1
50–59	6.6	5.3	4.4	4.4	4.2	3.8	5.0	2.6
60–69	8.5	5.4	4.1	4.7	3.4	2.4	3.9	2.6
70 and over	7.0	6.2	3.2	3.9	4.5	3.4	3.0	3.1
Average	**7.7**	**5.1**	**3.9**	**4.3**	**4.1**	**3.4**	**3.8**	**2.5**

ably reflects the loss of readily exchangeable, surface-bound fluoride, whereas the somewhat less precipitous drop in children may be the consequence of the progressive liberation of fluoride from bone through resorptive activity.

Summary

The urinary excretion of fluoride was determined in children, ages 7–16 years, and in adults, ages 20 years and older, following the reduction of fluoride in their drinking water from 8 p.p.m. to approximately 1 p.p.m. During a period of 27 months, the concentration of fluoride in urine specimens decreased from 6–8 p.p.m. to approximately 2 p.p.m. The urinary fluoride values during the period were considerably higher than would be expected for a corresponding group with no prior exposure to high levels of fluoride. These values indicate that previously stored fluoride was being mobilized. There was no apparent relation between age and urinary fluoride excretion within either group. However, the extent of mobilization appeared to be greater in children than in adults.

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Where are we going in public health?

a topical
and selective
report of the
83d
annual meeting
of the
AMERICAN
PUBLIC
HEALTH
ASSOCIATION
and related
organizations
held at
Kansas City, Mo.
Nov. 14–18, 1955

THE CHRONIC DISEASES, mental disorders, medical rehabilitation, and the consequent need to evaluate and reevaluate all public health programs constitute, it seems to me, urgent challenges that confront our profession. We cannot do less than to face these challenges with resolution and daring. The courage to do what is necessary is as basic to the character of our organization as it is to the moral fabric of the individual spirit.

HERMAN E. HILLEBOE, M.D.
President, American Public Health Association
1954-1955
From the presidential address to the American Public Health Association at the Eighty-third annual meeting, November 15, 1955.

The APHA Conference Report

Highlights of more than 130 papers presented at the 83d annual meeting of the American Public Health Association and related organizations, at Kansas City, Mo., November 14–18, 1955, are published in the following pages. *Public Health Reports* here seeks for the fifth successive year to provide a compressed but comprehensive review of the Nation's major annual public health meeting.

It is intended that this information shall be helpful not only to the multitude who did not attend the conference but even to the few thousand guests and delegates at Kansas City who regrettably found it impossible to attend more than one meeting at one time, not to mention luncheons, dinners, business meetings, discussions, and exhibitions.

Our editors have, with the assistance of the authors, selected and summarized the salient points of available papers for summation. The papers are arrayed below as nearly as possible according to the topical or professional interests they affect. To avoid repetition, we have refrained from identifying the sections or organizations which sponsored these papers, but a list of the sections and most of the organizations is published below.

Sections of the American Public Health Association

Dental Health
Engineering and Sanitation
Epidemiology
Food and Nutrition
Health Officers
Laboratory
Maternal and Child Health
Medical Care
Mental Health
Occupational Health
Public Health Education
Public Health Nursing
School Health
Statistics

Related Organizations Participating in the Conference

Associations

American Association of Hospital Consultants
American Association of Public Health Physicians
American Association of Registration Executives
American School Health Association
Association of Business Management in Public Health
Association of Labor-Management Medical Care Program Administrators
Association of Schools of Public Health
Association of State and Territorial Public Health Nutrition Directors
Association of State Maternal and Child Health and Crippled Children's Directors
National Association of Sanitarians
National Tuberculosis Association
Public Health Cancer Association

Conferences

Health Council Work
Medical Care Teaching
Municipal Public Health Engineers
Nurse Directors
Public Health Veterinarians
State Directors of Public Health Education
State and Provincial Public Health Laboratory Directors
State Sanitary Engineers

Others

American College of Preventive Medicine
Military Government-Civil Affairs Public Health Society
National Citizens Committee for the World Health Organization
National Health Council
National Sanitation Foundation

Goals and Issues . . .

Fight Chronic Ills Now, APHA President Urges

APHA President Herman E. Hilleboe, M.D., New York State health commissioner, in his address of welcome, pinpointed challenging and complex public health problems which, he said, call for shrewd collective analysis and planning: chronic ills, mental health, rehabilitation, and evaluation.

Historic achievements in public health, minimizing the threat of communicable disease, Hilleboe said, have permitted more and more children to live to maturity. The result: public health work of the future must deal more and more with mature persons among whom chronic disease and disability are prevalent.

"Our public health programs must encompass the degenerative diseases and the long-term illness," Hilleboe said. "We cannot delay longer, or we will be hopelessly overwhelmed."

Chronic Diseases

The special problem in the prevention of chronic diseases is prevention of progression of the major causes of death, chiefly cancer, diseases of the heart, and cerebral vascular lesions, he said. Rehabilitation plays a predominant role in the prevention of other chronic ailments—arthritis, neuromuscular disorders, and diabetes, he added.

"As we apply new knowledge of cancer, we lengthen the life of affected individuals and increase the magnitude of the problems of chronic disease and especially rehabilitation," he pointed out. "The increase in life expectancy offers benefits to the individual, but at the same time it adds social and economic responsibilities for the community and State," he said.

Truly preventive geriatrics should begin during early adult life with sound health programs directed against the chronic diseases as they begin to attack the aging body, he said, citing the pilot studies on atherosclerosis in Minnesota, the multiple screening studies in Virginia, the broad chronic disease program in California.

In Hilleboe's opinion, projects similar to the New York State research in cardiovascular disease, at the Albany Medical College, should be a vital part of all large health departments.

"What is the purpose of such a project?" he asked. "First of all, it gives a preventive service to State employees; but equally important, it is a research effort to learn how best to detect heart disease at an early stage and to develop new methods of effective and economical screening to find cardiac disease.

"We hope to gain basic knowledge of the preventive aspects of coronary artery disease and hypertension. We use this research project for the teaching of medical students and also for postgraduate education of general practitioners and health officers in the area. This is the type of project which should be a vital part of larger health departments, so that they may better meet the challenge of this crucial public health problem."

The theme "Where are we going in public health?" was a wise choice for the annual meeting of the American Public Health Association, Hilleboe remarked. The APHA Committee on Administrative Practice is sponsoring a study on what official and voluntary health agencies are doing on a communitywide basis to meet the problems of chronic illness, he noted. In 1956, the association plans to use its journal and newsletter, meetings of regional groups, State societies, and expert committees to bring the challenge of public health in a changing world to health workers everywhere, he added.

Mental Health

The establishment of a mental health section within the organization structure of APHA is also an encouraging sign, he remarked, and made the following comments:

"It has been estimated that some 25 percent of the Nation's labor force suffers from some form of emotional disturbance. This situation and its attendant dislocations, in terms of wages paid for no productive results and in terms of damage to men and machines, cost industry billions of dollars a year.

"Every year a quarter of a million new patients enter mental institutions. Our mental health experts tell us that one out of every 12 persons will sometime during his life become a mental hospital patient, and that in the United States today there are some 10 million persons suffering mental illnesses or disorders. The personnel and facilities fall far short of the demands of these people who are swelling the ranks of the chronically ill."

In commenting that the public health movement has not done nearly enough to cope with the agonizing issues of mental disease, Hilleboe stated that public health and mental hygiene authorities in the States are complementary and never should be competitive. He urged close and continuing collaboration.

Other challenges to the public health profession Hilleboe discussed are the pressing demands for medical rehabilitation and the need to discover more precise tools with which to evaluate and reevaluate public health problems.

Rehabilitation

On rehabilitation, he had this to say:

"Public health physicians need to have an appreciation of the important part played by family doctors in this field. Public health workers can serve best by supplementing and enhancing the work of the family physician. Medical rehabilitation, viewed in this broad perspective, is a synthesis of the skills of the family

physician and the public health worker each of whom contributes to the common goal of correcting or retarding the ill effects of disease and disability. This teamwork promotes optimum health for the community through preventive services to its individual citizens.

"Medical rehabilitation of the physically and mentally handicapped calls upon every field of activity in health, vocational service, and welfare. Not only must the many different needs of the disabled individual be met adequately, but the overlapping services require meticulous synchronization.

"Teamwork of the highest order is necessary from the beginning to the end of the rehabilitative process. Immediately after the medical members of the team diagnose disability and make a plan of treatment, the educational members join with their vocational guidance and training. The welfare team members also are concerned from the start with the social problems of the individual and the associated problems in the home in which the disabled lives.

"The same pattern of teamwork is needed among the several departments in State government concerned with medical rehabilitation. The rigidity of antiquated laws and the barriers of traditional practices too often stand in the way of realignment of duties and responsibilities to meet the present-day needs of the disabled. A new approach is essential. . . .

"For public health workers to direct and advise on the medical aspects of rehabilitation in no way interferes with the prerogatives of the guidance counselors, educators, and technicians in the vocational aspects of rehabilitation. Nor does it interfere with the employment experts in the departments of labor or education in the placement programs. Interdepartmental planning can solve these problems of relationship if the departmental representatives will only learn to communicate with one another, share burdens, and divide their responsibilities.

"Every State could benefit from an interdepartmental council in the field of human resources to make full use of available personnel and facilities in medical rehabilitation. Here is a productive interprise in which public health workers can take the initiative in those States that do not have such interdepartmental council.

"The future success of local health departments throughout the Nation may well depend upon the programs developed to serve citizens with chronic diseases, especially in the field of medical rehabilitation. Indeed, in planning to meet the future health needs of the Nation, let us not forget that a large share of adult medical care consists of medical rehabilitation."

Future success in meeting the challenge of chronic diseases, mental disorders, and medical rehabilitation depends on our collective ability to adapt to current demands and also upon the realism of our analysis and evaluation of the whole structure of public health activities, Hilleboe concluded.

Rule of Habeas Mentem Protects the Public

In the shape of things to come, public health services will be designed more and more by an informed and insistent public, according to Fillmore Sanford, executive secretary of the American Psychological Association.

Sanford discussed current social trends, their implications for public health, and anticipatory possibilities. This prospect of popular guidance of public health practice, he said, indicated an expanding responsibility for the behavioral sciences.

Increasing freedom from drudgery, increasing freedom from the major killing diseases, advancing levels of education, and increased scientific knowledge of the world, including knowledge of human behavior, he said, have their meaning for the practitioners as well as the beneficiaries of health services.

The increasing knowledge of behavior, surpassing present understanding of the unconscious, the conditioned reflex, and intelligence, will permit people to improve their predictions of human behavior. As predictions improve, anticipatory action may be expected to improve, too, he commented.

In the public health profession itself, he said, there will be increasing attention to creative action, increasing pressure to change the character of the professions, and an expanding concern with behavior and mental health.

He observed that there are four distinct attitudes in health, productive of characteristic programs: the mood of passive acceptance, the curative attitude, the preventive policy, and the emerging concern with creative potentials, aiming ultimately to develop creative vitality in all living.

In the long trend toward creative health, he foresaw further democratization and secularization of health and welfare work. Informed and independent people, the products of improved education, will not take gracefully to the professional expert who assumes an autocratic role. They will resist prefabricated solutions served on a ritualistic platter, he said.

With such a public, the psychologist may serve best as a teacher and interpreter who can help individuals, in or out of the health profession, to straighten out their own behavior patterns. Such a psychologist observes the principles of habeas mentem, the right of a man to his own mind. Brotherly giving, rather than paternal direction, by the professional is rooted in the continuing advancement of knowledge.

Without progressive growth of knowledge, the professional feels pressure to keep secrets, to cultivate dependency, since such specialized knowledge is power. The best way to insure its use for the public good is to invest the power in the public.

The faith that knowledge of people is knowledge for people is for the psychologist a mundane practicality which coincides with the liberal democratic tradition.

The layman is already ahead of the professional in the quest for creative health. The profession is undertaking to apply behavioral knowledge for public use through such operations as the personnel and testing projects of the APHA testing office, the Behavioral Studies Section of the Public Health Service, and the Joint Council on Behavioral Science in Public Health.

Population Shifts Compel Review of Health Goals

Quantitative and qualitative changes in the United States population demand reappraisal of our ideas about basic health services and a basic health staff, declared John J. Hanlon, M.D., M.P.H., chief, Public Health Division, International Cooperation Administration.

Concerning the continued absolute and relative increase in the older population, Hanlon noted that in 1900, only 18 percent of our population was over 45 years of age, whereas today the figure is 30 percent. By 1975, an estimated one-half of our labor force will be over 40 years of age.

He stated that public health has been doing little more than "dabbling about in the vast area of adult health, chronic diseases, and geriatrics."

The recent upward trend in births indicates that all types of maternal and child health services not only must remain but must expand, Hanlon continued. The annual number of births is expected to reach 6 million by 1975.

Considering current personnel shortages and the prospective increase in population to 210 million or 230 million by 1975, Hanlon estimates that in 20 years we will need about twice the number of public health workers now on the job.

"A considerable retooling job" by the professional schools is also called for, acording to Hanlon. Goals, curriculums, and facilities should be subject to careful scrutiny and analysis, and extensive study should be made of the types of individuals who might be accepted for training, he said.

Spatial Changes

Spatial changes in the population, that is, more or less permanent changes in geographic distribution, have accentuated the gaps in medical and public health personnel and facilities, Hanlon specified. To improve the situation, he urged equitable sharing of support of professional schools and training centers and the development of satisfactory means of transferring accumulated job benefits, such as retirement and pension rights.

Among the several types of spatial change, Hanlon mentioned: the renewed movement of industries and businesses to the west, northwest, and southwest; the northward movement of the American Negroes; and the tendency toward "urban sprawl."

Indicative of population mobility, Hanlon said, is the fact that between April 1950 and April 1951, 21 percent of the population moved to another house. One-third of these families moved to another State or county.

Such changes are a challenge to environmental health, he pointed out. Urban and suburban slums must be avoided, new water and sewerage systems constructed, housing developments supervised, streams and the atmosphere protected against pollution, industrial hygiene and safety services extended to new plants, and entire communities educated in a new setting.

Temporal Changes

Applying the term "temporal change" to temporary population movement, Hanlon noted that temporal population changes give rise to somewhat specialized health problems—those of the traveler and the migrant worker, for example.

Much remains to be done to make both national and international travel hygienically safe in terms of contacts, food, drink, and waste disposal. The sanitary needs of the traveler lag one or two generations behind improvements in speed and comfort, he said.

Increased worldwide travel may call for reemphasis of global epidemiology, Hanlon suggested. He believes also that more attention to quarantine activities, international standards, and carrier sanitation and examination will be required. Coupled with this work, he said, is technical assistance in health to other countries.

Urges Stronger Emphasis On Industrial Health

Specific public needs in occupational health and in supervision of medical care were stated in behalf of organized labor by Leonard Woodcock, vice president, United Automobile Workers.

Speaking of labor's experience with occupational health services and with prepayment plans for medical care, he said:

"We urgently need a stepped-up program of industrial health. We need improved standards publicly arrived at. We need active and disinterested enforcement of standards. We need responsibly conducted public research on the key problems of industrial health to determine the extent to which cancer, heart disease, and other major disabilities are work connected. New studies are needed to keep abreast of the changing occupational environment which now exposes people to the risk of radiation and to the hazards of new chemicals and new materials. Improved reporting and detection programs are needed."

He said unions were getting better cooperation on health services from State labor departments than from health agencies. "Without excep-

tion," he said, "State health departments do not have the staff needed to enforce statutory standards of occupational health and safety." He added that essential information is irrevocably lost because of inadequate reporting of occupational disease.

Speaking of labor contributions to the growth of prepayment plans for health services, he said, "Under health programs negotiated by our union alone, over 3 million workers and dependents have hospitalization and medical coverage. The annual cost of these coverages is about $130 million. Usually the cost is split between the employer and the worker. The employer's share, however, is part of the worker's compensation; it is an item over which his union conducts collective bargaining and it is paid in lieu of increased wages."

He voiced several familiar criticisms of the operation of prepayment plans, with emphasis on the fact that the subscribers have little capacity to assess the quality of the services and that the plans give far too little attention to preventive services which might enable subscribers to secure effective health services at reasonable costs. He felt that a stronger government interest in the operation of prepayment plans was warranted in view of the fact that subscribers constitute a majority of the population.

Although labor has always favored a system of national health insurance, as the most effective way to obtain comprehensive health services, he said there was no choice but to give the voluntary system a fair trial. However, he added, public health agencies have "an inescapable responsibility concerning the quality of care." And he said they are derelict in developing comprehensive preventive health services.

"Public health should conduct programs of research on how to organize and administer medical care and extend its scope to prevent illness, furnish rehabilitation, and guarantee that institutions and persons licensed to practice do indeed give high quality care," he said.

The issue between national health insurance and the voluntary prepayment plans, he concluded, will be determined in the long run by the availability of broad, voluntary prepaid programs whose scope and quality is assured. "The challenge to public health," he asserted, "is to move into this field as a representative not of the healing arts profession, but on behalf of its citizens."

An Industrialist Looks At Public Health

Most industrial companies now recognize their obligation to be good neighbors and that "their greatest asset is the health of their employees. They see a direct relationship between efficiency and health, which includes the health of the worker himself and that of the people in his home and in his community," stated Admiral Ben Moreell, chairman of the board, Jones and Laughlin Steel Corporation, Pittsburgh, Pa.

"If we would reap the full benefits of our American traditions, each of us has a moral obligation to contribute, voluntarily and generously, to the preservation of the health of the individuals who make up our society," he said.

Speaking as an industrialist, he said he would list our current major health problems under six headings: (*a*) the aging population, (*b*) chronic diseases, (*c*) mental hygiene, (*d*) industrial health, (*e*) hospital and medical care, and (*f*) prevention of accidents.

"As we assume responsibilities in these areas, we must have the courage to eliminate current programs which deal with obsolete problems," Moreell declared.

He decried the huge expenditures "for 'warehousing' the sick, the tired, the helpless aged, and the indigent," which are "in painful contrast to the meager sums spent for prevention of these disabilities." In Pennsylvania, for example, nearly $10 million is spent annually for tuberculosis hospitals. This sum, he said, is sufficient to finance a vigorous preventive campaign that might well end the scourge.

Industrial Medicine Opportunities

Many industrial health programs, too, according to Moreel, are still in the "horse and buggy stage." But there is growing realization that our Nation's 65 million gainfully employed provide an excellent opportunity for the furtherance of effective preventive medicine, he said.

"We regard our industrial health program as one of preventive medicine which cooperates with constructive public health activities," he declared. The goal is conservation, protection, and furtherance of the health and capabilities of the individual worker.

Viewing occupational health as an ally of public health, he stressed the need for greatly expanded cooperation between the two. He mentioned, for example, that inplant medical activities afford important opportunities for mass studies of certain diseases.

"We should proceed with a bold attack on this front in the hope that from mass studies we will obtain knowledge that case-by-case studies have not provided," he asserted.

Another area in which the lessons learned in industry can be applied outside the plant is that of the so-called fringe benefits. "If we could obtain accurate statistical data," he said, "we could avoid many disagreements on objectives and methods and provide greatly improved service to our employees with little increase in cost."

Also needed is research which will tell us how to reduce the cost of medical care without reducing its effectiveness. We have reached the point, he remarked, where we must take definitive action to teach folks how to care for sick people at home, especially in chronic illnesses.

A Campaign Platform

Moreell suggested the following platform for a campaign to improve public health practices:

1. Home rule—government in the hands of the people back home, county health departments, decentralization of authority and responsibility.

2. Competence—professionally qualified officials without political motivation.

3. Legislation—to give local communities freedom to act; to place policy decisions in the hands of skilled administrators and professional decisions in the hands of professionals.

4. Problems of the aged—research on industrial retirement practices to determine what should be done about "young men of 65" and "old men of 50."

5. Preventive medicine.

6. Self help—home care programs and other treatments outside the hospital.

7. Mental hygiene.

In all these suggestions, the common theme is that people should be helped to help themselves, Moreell emphasized.

Legislation in 1951 which enabled Pennsylvania to establish county health units Moreell considered the State's most important advance in public health in recent years. "I believe that county health departments are the best mechanism for public health services in many areas," he declared. For example, they serve as effective means for providing service in the two important fields of off-the-job accidents and off-the-job sickness.

Population Trends Affect Public Health Planning

The volume of internal migration, the great increase in the child population, and the steady increase in the proportion of older persons in this country present actual and potential considerations in planning public health services, according to Robert D. Grove, Ph.D., assistant chief, National Office of Vital Statistics, Public Health Service.

The predominant direction of population migration to the far west and coastal areas, the rapid growth of urban and suburban areas, and the noticeable decline of the rural farm population are outstanding characteristics of population trends, Grove said.

A rapidly growing area is faced with the necessity of expanding its hospital, clinic, nursing, and sanitation services, he commented. It must succeed in obtaining large-scale financing, in convincing local governing bodies that programs of the necessary magnitude should be undertaken, and in getting new residents to share in decisions affecting the community's future. Sometimes, new residents bring with them certain health difficulties that were not previously significant in the community.

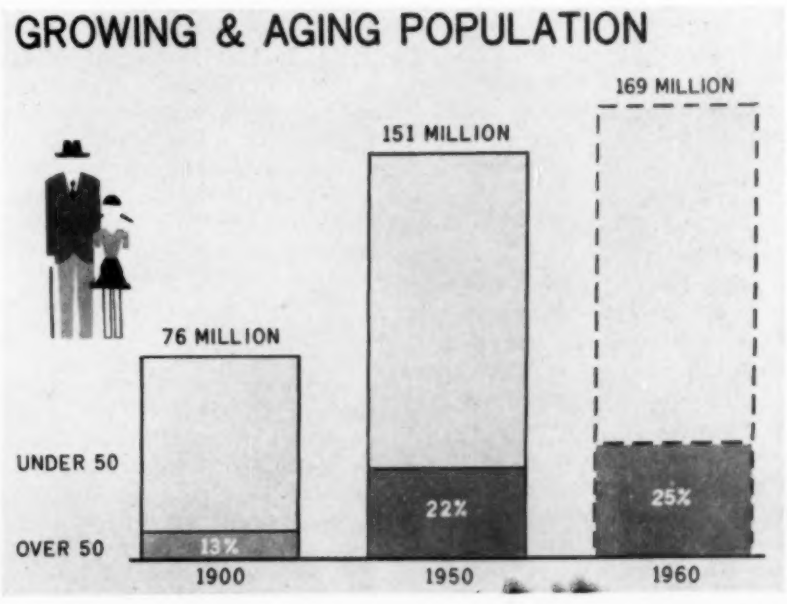
The movement to the suburbs usually removes many high income residents from the central cities and may reduce the personal and financial resources for maintaining health services for the city, he continued. This trend represents a hazard not only to the continued provision of health services to the residents of the city but also the health of the many suburban residents who work in the city.

The rural areas, many of which never have had adequate health facilities and services, may find it even more difficult to support them in the face of a declining population, he added. This decline may affect particularly the services for children.

There is reason to believe, he continued, that the number of women entering the childbearing period will begin to increase about 1960 and rise thereafter, and that by 1975 the number of children under 5 years of age will be about one-third more than at present.

One effect of the present tremendous increase in babies and children can be seen in the education field. By 1965, high school enrollment is expected to be about 50 percent higher than in 1955. The wave of additional children has affected needs for school health services, for prenatal care facilities and well-baby clinics, and calls for greatly expanded mental health facilities and larger programs for the prevention of serious accidents.

The number of persons 65 and older can be expected to rise by one-half between 1955 and 1975, he said. Although the attention of health and welfare agencies already is focused on the medical needs of older people, the future will see even greater ne-



cessity for additional services in this area.

It is necessary to recognize the major trends, but it is important for analytical or administrative purposes to investigate also the variations within the trends, Grove concluded. Among the variations he discussed were the rates of urban (white and nonwhite) population change, the loss in population of many areas, the variation between areas in the rate of child population increase, and the reverse of the decline of medium-sized families.

Negro Gains Status In Medical Services

Racial integration of medical or health services has progressed notably in the past 20 years, according to limited data obtained by Paul B. Cornely, M.D., Dr.P.H., head of the department of preventive medicine and public health, Howard University College of Medicine, Washington, D. C. It touched a low ebb early in the 1930's, gathered steam in the 1940's, and in the last few years has found general acceptance, at least on a token basis.

In 1936, of 73 Negro graduates of medical schools in the United States, all but 8 received their degrees from Howard or Meharry. For those who were graduates of medical, dental, nursing, and pharmaceutical schools, opportunities to practice were limited. Membership in professional societies was restricted if not closed. Of 7 States surveyed in 1930, 1 employed 2 Negro physicians on a part-time basis and 3 employed 29 Negro nurses.

The quality and number of hospital beds available to Negroes in the southern States was such that, to meet the need, 183 so-called Negro hospitals had been established. Of this number, 20 were approved for intern training. Philanthropic aid for Negro health came almost exclusively from Julius Rosenwald and the Rockefeller Foundation. Voluntary health insurance, which had its origins in the 1930's, in no way touched the Negro population.

One of many developments toward the end of the decade was the realization that health clinics with Negro patients would enhance results by employing competent Negro professionals, Cornely noted. This reflected, he said, a changing social attitude, accelerated by surveys of needs and costs of medical care and by the emphasis on racial issues in international affairs.

Medical Doors Opening

In 1946, the American Nurses Association established a direct national membership for nurses who were not admitted to membership in their county societies. The Baltimore County Medical Society in Maryland opened its doors to Negro doctors in 1948. Oklahoma and Missouri followed suit in 1949. The University of Arkansas in 1948 became the first of 26 southern medical schools to admit a Negro student. The number of Negro students enrolled in medical schools in the north increased to 118. Internships and residencies opened in about 16 more institutions in 1948. The Hospital and Construction Act in 1947 included an antidiscrimination clause.

Although the proportion of Negro students in medical schools in 1955 was still small, it was up to 2.5 percent in Michigan. The average was less than 1 percent in the other northern schools. The northern average was about the same as in the southern medical schools, other than Howard and Meharry. Nevertheless, 8 of the once restricted southern medical schools in 1955 had a total of 43 Negro medical students.

All southern State medical societies, with the exception of Louisiana and possibly North Carolina, have opened their rolls to Negro physicians, even though as yet only a minority have taken up membership. Negro nurses and pharmacists are able to join their national professional societies without going through local or county units. The Negro dentist in the south, however, is still barred from membership in the American Dental Association.

Patient Care

Negro enrollment in health insurance plans is difficult to measure because membership is not recorded according to race. Estimates of membership in various plans range from 1 to 20 percent. All insurance plans, with the exception of two in the south, report that Negro physicians participate, if available, in surgical plans.

Cornely's figures indicate that four-fifths of the general hospitals in the north now offer patient care without racial distinction, but such integration applies in only 4 of 69 general hospitals in the south. A similar differential is found between special hospitals of the north and south. About 10 percent of the northern hospitals offer residencies to Negro physicians and 20 percent permit membership on the active staff. Staff privileges are somewhat more available in southern hospitals, where Negro physicians are expected to serve patients in segregated wards.

Services provided by health departments in the north are predominantly but not wholly integrated. Of 23 cities, 13 reported employment of Negro professionals in official health agencies. Of 8 southern cities, only 2 reported integrated services, and all employed Negro professionals.

Among 200 voluntary health organizations in the north, 1 out of 6 employ Negro professionals, and a similar proportion—but not the same organizations—have Negro board members. The proportion was somewhat higher in the south.

Health Manpower Angles Explored by Panel

"Where do we get our manpower?" This basic question in providing adequate health services for America's millions produced a variety of answers from a public health panel.

Leroy E. Burney, M.D., Assistant Surgeon General, deputy chief of the Bureau of State Services, Public Health Service, said that while recruitment must be stepped up the energies of the professional public health worker must also be redirected in order to gain the fullest use of his service.

He suggested that the professional worker should rely to a much greater extent on the talents of the nontechnical members of the public health team.

"We have hardly begun to appreciate the major contributions that homemakers, nurse aides, practical nurses, business administrators, executive assistants, and sanitarians can make to public health," he said. "By delegating many of the daily operations not directly related to his professional skills, the highly trained worker will be able to devote a much larger part of his valuable time to problems requiring his special competence. Only in this way will the professional worker be able to meet the ever-increasing demands for his services."

Trainee Selection

William C. Cottle, Ph.D., professor of education and assistant director of the guidance bureau, University of Kansas, believes that research into the traits of successful persons in public health occupations will yield material which can be utilized in schools and recruitment and improve staff productivity.

Efforts to date have been concentrated on telling people about, and selling them on, the advantages of careers in public health. Now we need to discover the kind of people who are and are not successful in the varied fields and the traits that make them successful, he said.

Cottle advocated the same scientific research approach to the selection of trainees in public health that are used in identifying, treating, or preventing an infectious disease or in solving any other major scientific problem.

"Before we can award scholarships and fellowships, we need to know what kind of scholars and fellows we want," he explained. "The range of jobs in public health covers people with varied traits, and a person unsuited for one occupation in public health may have the aptitudes, abilities, and interests that fit him for success in another field of public health."

Cottle also suggested part-time employment of public health workers who become housewives.

Perry Sandell, M.P.H., director of the bureau of dental health education, American Dental Association, stated that future health manpower needs can be more definitely determined after we have been able to make the most effective use of health personnel now available.

"We hear repeatedly of the misuse and waste of the special skills of people engaged in public health work. Not only does this result in ineffective use of personnel, but often results in loss of health personnel because of job dissatisfaction," he said.

On the Job Training

Ross Kandle, M.D., deputy commissioner of health of New York City, advised that an active accredited residency in preventive medicine is essential in recruiting physicians. The New York State Department of Health, he said, has six young physicians in training for careers in public health.

Kandle also advocated advanced training and education on the job. Well-grounded sanitarians might go to night school in urban areas and with help from a health department become engineers, he pointed out. Nurses recruited at staff level can be helped to get basic training in public health if they and the agencies both believe that adequate training in public health nursing is worth while.

An attractive pension plan is vital in holding a staff, he said, and important in getting people who will have an opportunity to grow on the job.

Also discussed at the session was the Health Career Horizons project of the National Health Council, which is putting information on all health careers within the reach of the Nation's high school students and their parents, teachers, and counselors.

World Health . . .

Eradication of Malaria, A World Health Goal

Ever since the Interim Commission of the World Health Organization inherited certain malaria control programs from UNRRA in 1946, WHO has placed top priority on helping governments to initiate or expand malaria control programs in all countries in which the disease is a serious problem, declared Louis L. Williams, Jr., M.D., consultant to the Pan American Sanitary Bureau, WHO Regional Office for the Americas.

By the end of 1954, a dozen countries or territories had eradicated or almost eradicated malaria, and the various agencies assisting malaria control—WHO, UNICEF, and the USICA—now are recommending the abandonment by all countries concerned of the restricted idea of control in favor of intensified campaigns aimed at achieving complete eradication as soon as possible.

Growth of the Idea of Eradication

To illustrate how the concept of eradication has developed, Williams reviewed briefly malaria control activities in the United States from the early years of this century to the

eradication campaign of the late 1940's.

Among control highlights were the extension to rural areas of methods of killing mosquito larvae through use of oil and wind-blown paris green; the development of county-wide malaria programs accompanying the growth of rural county health departments; and drainage involving the digging of more than 60,000 miles of ditches, which Williams stated "went a long way toward breaking the back of the malaria problem." Intensified malaria control programs during World War II carried out by State and county health departments in cooperation with the Public Health Service, and aimed particularly at protecting Army training camps in the south, brought further progress in removing malaria as a health menace.

As a result, the concept and feasibility of eradication of malaria from the United States came to be accepted, and in 1945 the Public Health Service requested an appropriation to help health departments continue and extend the wartime programs, and to include all areas in which malaria still existed. In 1945 this was termed the Extended Malaria Control Program, but in 1947 the funds were being appropriated unequivocally for malaria eradication as such.

DDT and Chemotherapy

In 1946 DDT became available for malaria eradication in the United States and was also used overseas by the military. DDT as a residual spray is effective at low cost. It has led to eradication, but it has also led to a need to achieve eradication before resistance to DDT develops in the anopheles mosquitoes.

Williams called attention to another string to the malariologist's bow—chemotherapy. Antimalarial drugs such as chloroquin, primaquin, and pyrimethamine attack the malaria plasmodium within the human body and prevent its development and transmission.

Global Eradication

As programs become nationwide, he said, there is a need for their expansion into regional programs, a function of international agencies. In 1950 the Pan American Sanitary Bureau resolved upon a continental eradication program, and in 1954 the 14th Pan American Sanitary Conference decided to hasten this process by resolving that member governments should convert all control programs into eradication campaigns within the shortest possible time.

In 1955 the Eighth World Health Assembly requested governments throughout the world to intensify malaria control plans so that eradication may be achieved, and it authorized increased WHO assistance to governments. UNICEF appears willing to multiply by 4 or 5 times supplies to antimalarial activities where the goal is eradication.

By the end of 1954, the situation in five of WHO's regions was encouraging. In Africa great distances and depressed economies make eradication seem a utopian goal, although this need not be so if administrative obstacles are overcome. Williams outlined WHO functions, which include technical assistance and training in malaria control as a part of building strong national health departments, and which are supported by the knowledge of a worldwide panel of experts. Much of WHO's malaria activities are financed by United Nations technical assistance funds, and UNICEF provides large amounts of insecticides and equipment.

Throughout the world, excluding the Iron Curtain countries and most of Africa, some $32 million is being expended this year in fighting malaria. WHO estimates that approximately doubling this amount could convert all control programs into eradication campaigns. As the campaign approaches its end, Williams concluded, it is inevitable that more assistance will flow from the more fortunate nations to countries with low economic resources to enable them to eradicate malaria and remove the hazard of reinfection. "When that time comes, the World Health Organization should have no difficulty in achieving the ideal objective of global malarial eradication," he said.

UNICEF Gives Top Priority To Malaria Eradication

For the immediate future, the United Nations Children's Fund (UNICEF), like the World Health Organization, will give priority to malaria eradication, announced August R. Lindt, LL.D., minister plenipotentiary, permanent observer of Switzerland to the United Nations and member of the Executive Board, United Nations Children's Fund.

UNICEF's Executive Board, he stated, has endorsed increases in aid to governments wishing to intensify drives against malaria. At its September (1955) session, it approved assistance for eradication campaigns in El Salvador and Mexico. The allocation to Mexico—$2,400,000 for the first 18 months of the government's 5-year campaign—is the largest single sum ever voted by the Fund. UNICEF-aided malaria eradication campaigns are under way also in Haiti and in Trinidad and Tobago.

Trachoma and leprosy, both of which take a high toll of child health, are other diseases which promise to assume greater importance among UNICEF-aided programs, Lindt said. WHO- and UNICEF-assisted efforts to combat these diseases, he pointed out, had to await the development of techniques which make possible relatively low-cost and far-reaching campaigns.

Explaining the role of UNICEF in world health activities, Lindt noted that its exclusive function is to provide aid for improving the welfare of children, as the name implies, and that its aid is primarily in the form of supplies. Except in emergencies,

assisted countries match the dollar value of UNICEF aid. Over the years, he said, their average expenditure has been $3 for every $2 from UNICEF.

In all its work, Lindt stated, UNICEF relies on the Food and Agricultural Organization and the World Health Organization, which provide aid primarily in the form of technical assistance, for assurance that its policies and planning are based on sound technical ground. He called special attention to the WHO's division of maternal and child health, which works closely with UNICEF.

Current Programs

This year UNICEF-aided disease control and nutrition campaigns are benefiting more than 32 million children and expectant and nursing mothers, Lindt reported. He mentioned the following specific UNICEF contributions: BCG vaccine, which is enabling WHO/UNICEF programs to vaccinate 14½ million children against tuberculosis; DDT, which is protecting other millions against malaria; penicillin, the sulfones, and other drugs, for use against yaws, leprosy, trachoma, and other diseases; and milk, which is the foundation for a multitude of child nutrition programs. Powdered milk, he noted, is donated to the Fund from United States' surplus supplies; the Fund pays only the cost of transportation.

Maternal and child health centers set up or improved with WHO/UNICEF aid number 5,000, he said. As an example of the results of this work, he gave the following data for West Bengal, India: In December 1953, when first shipments of UNICEF equipment for health centers were due, 6,700 children and mothers made first visits to maternal and child health centers in the area. In March 1955, 58,000 made first visits.

Help in developing facilities for improving local dairy industries and for the manufacture of other protein-rich, low-cost foods is another UNICEF activity, which is being conducted in cooperation with FAO, according to Lindt. As examples of the latter, he mentioned a plant in Indonesia which will process a drink made of soybeans, peanuts, and malt and a fish flour production plant in Chile.

NTA Director Considers World Control of TB

The elimination of all human infections caused by tubercle bacillus, the goal of tuberculosis control in the United States, can also be the world goal in tuberculosis control, maintained James E. Perkins, M.D., managing director, National Tuberculosis Association.

"I know of no valid reason why this goal may not be capable of fulfillment if one does not attempt to put a time limit of its achievement," he said.

Even in countries with an astonishingly high tuberculosis rate, areas of comparatively little or no infection can be found, he noted. Is it too much to hope that such areas can be enlarged gradually until finally the spots of high prevalence fade and disappear?

Particularly encouraging in accomplishing such a feat, Perkins felt, is the indication that, with new drugs, the expensive and slow step of hospitalization can be minimized. He emphasized, however, that he was not suggesting that hospitals are no longer necessary, and he pointed out that carefully controlled, extensive trials of drugs in outpatient treatment of tuberculosis are barely begun.

Perkins also is hopeful for the development of a completely acceptable vaccine suitable for universal application. This would be even more of a shortcut to the eventual eradication of tuberculosis, he said.

He is aware, he remarked, that some experienced epidemiologists consider such a goal unrealistic. They point to the fact that the tubercle bacillus is only one of many causes of tuberculous disease and therefore object to calling it the primary cause.

"But in the absence of the tubercle bacillus," Perkins pointed out, "there can be no tuberculosis regardless of the degree of malnutrition, mental trauma, poverty, overcrowding, war, or the multitude of other overlapping and ill-defined factors frequently associated with the development of tuberculous disease; furthermore, there seems little doubt that an individual will develop tuberculous disease if he receives a sufficiently heavy infection of tubercle bacillus regardless of his resistance. It therefore seems quite proper to refer to the bacillus as the primary cause and the other factors as secondary causes."

Perkins doubted that cyclic reductions and resurgence of tuberculosis are inevitable in the future, in view of the specific control measures now available.

International Activities

According to Perkins' brief review of international activities, definite progress is being made in reducing the tuberculosis problem, but the progress is admittedly slow. WHO and UNICEF, he said, have almost necessarily limited their tuberculosis work largely to mass administration of BCG.

Dr. Chandra Mani, director of the WHO Regional Office for Southeast Asia, recently was reported to have said that the fight against tuberculosis, though intensified, is not even approaching the threshold of success in his area, Perkins stated. Dr. Mani stressed that, lacking any swifter and more potent weapon than the BCG vaccine, tuberculosis "will remain public health enemy No. 1 for some years to come," Perkins noted.

But WHO is exploring other solutions, Perkins said. More or less summing up the international situation in tuberculosis control are the following statements which he quoted from a *WHO Chronicle* review of the Director-General's annual report for 1954:

". . . in countries where within 5 years the [tuberculosis] mortality has diminished by about half, the

number of reported cases of tuberculosis has dropped little, and the number of known infectious cases has sometimes even increased."

". . . mortality figures can no longer be used as an index of the incidence of the disease . . . the prolongation of life in patients seriously afflicted with the infection may result in greater need for public health measures for their rehabilitation and assistance; and the epidemiological significance of widespread chemotherapy will have to be determined."

The review went on to say that "problems such as these are being given serious consideration by WHO. It is urgent, for example, to determine how effective ambulatory chemotherapy may be in areas where institutional facilities are not, and cannot be, adequate to meet the need for isolation and treatment."

Improvement in Sanitation Faces Slow Going

From a global standpoint, no great change in sanitation practices may be expected in less than a generation, because they must depend primarily on the children and youth of today, stated Herman G. Baity, Sc.D., director of the division of environmental sanitation, World Health Organization.

Sanitary management of shelter, water resources, food service, wastes, and vectors is slow to improve, particularly in areas where its significance must be learned, habits changed, and facilities built and used, he pointed out. Within the next 5 years, however, he believes that all governments can accomplish the following basic things:

1. Recognize the real benefits of sanitation to the health and well-being of their people.

2. Establish a sanitation unit within the national health service and staff it with personnel competent to plan and direct all phases of work in this field.

3. Integrate sanitation with other public health undertakings.

4. Develop a long-range plan of sanitation for the country as a whole, into which projects and programs may be fitted logically as to time and place.

5. Realize that it is possible to do something helpful in environmental sanitation under any conditions and under any budget and that the simplest things are often the most important.

6. Select a point of beginning, always the most difficult step, and outline an orderly progression of work and objectives.

An Urgent Necessity

Pointing out that an examination of the reasons for inaction and unsuccessful projects in sanitation is not only an instructive exercise but an urgent necessity if future planning is to be soundly based, Baity gave considerable attention to these aspects of international health work.

One reason for the slow development of sanitation programs in some areas, he said, is a lack of real understanding of the meaning and potential of sanitation. For example, the term is used sometimes to refer only to excreta disposal, he remarked.

In other areas, a sense of despair engendered by the sheer enormity of the task prevents action being started, he noted. Such an attitude, he said, is often heightened by fear of unknown and possibly high costs of necessary construction, and little or no effort is made to analyze the relative costs to local governments and to individuals.

Still another deterrent sometimes encountered is the expectation that, if action is delayed at local levels, sooner or later a higher level of government will accept responsibility and, in some magical way, do the work without cost to the community.

Reasons for unsuccessful projects, according to Baity, include these: no plan into which the project fitted logically as to time and place; lack of real integration of sanitation into the general health services of the country; inadequate attention to the education of the people expected to use the improved facilities or failure to enlist their active participation in construction and maintenance; lack of sufficient qualified personnel to carry out the various functions; absence of a fiscal plan for the upkeep of the project and its extension into a broader program.

Positive Results

On the positive side, Baity noted that, under the stimulation and guidance of WHO and other international agencies, the member countries of WHO are showing a noticeable upsurge of interest in the improvement of sanitation, particularly in Southeast Asia and Latin America. He mentioned, for example, the sanitation programs in Ceylon, India, and Burma. He also mentioned that the Pan American Sanitary Bureau has recently been asked to supply engineers for sanitation work in Nicaragua, Venezuela, Colombia, Mexico, and Uruguay.

WHO, an association of states organized for cooperative effort, provides "an unparalleled opportunity for bringing knowledge, skill, experience, and means . . . to bear upon the forces of ignorance, apathy, poverty, and despair which have so long imposed a cruel burden," Baity concluded.

WHO-Member Countries Relationship Defined

A pattern of give and take for the common good based on mutual respect, close and frequent contact, and cooperative effort characterizes the relationship between the World Health Organization and its 80 member nations, stated Henry van Zile Hyde, M.D., chief of the Division of International Health, Public Health Service, and United States member of the World Health Organization's Executive Board.

Through WHO, "the spirit and machinery of effective permanent relations between nations have been created in the field of health, and they are operating smoothly and well," he declared.

Twice a year, Hyde pointed out, the health authorities of the world set aside their own business and travel great distances to meet together to consider one another's problems. He was referring to the annual world health assemblies and the annual meetings of the WHO regional committees. The latter, he said, provide an opportunity for governments to talk with their neighbors about health problems of their neighborhood.

The technical personnel of the WHO staff are another contribution of the member countries. The member countries have been most generous in making available for WHO work many of their top public health leaders, even though they leave a vacuum in their own country's health work, Hyde said. The WHO staff, now numbering 1,307, is larger than that of any other agency within the framework of the United Nations except that of the United Nations itself.

The Receiving Side

Discussing the receiving side of the relationship, Hyde noted that in the beginning member nations did not know what to expect or what to seek in the way of help from WHO. Some wanted supplies; others wanted money; and still others wanted technical advice and assistance. The last is what WHO had to offer, he said, and the product proved so good and was presented in such a spirit that all the nations rapidly recognized its value. A parade of requests which taxes not only the finances of WHO but also the intellectual capital available to it is the situation today.

There is no stigma attached to requesting aid from WHO, Hyde emphasized, and he pointed out that competent leadership requires a recognition of one's own limitations and the ability to find ways to compensate for them. The progressive and dynamic leaders of public health are therefore the very ones who have asked most frequently and fervently for help, he said.

Greatly strengthening the relationship between WHO and its member countries, according to Hyde, has been the creation of regional offices covering several countries or the stationing of representatives in individual countries. Through these devices, WHO is in intimate daily contact with the ministers and directors of health, as well as with the entire health staff, of each country, he noted.

Hyde calls the trust and friendship developed among the health leaders of the world through WHO during its short history phenomenal. They carry over into the operating relations between WHO and the governments, he said, so that when WHO deals with governments, professional friends are dealing with professional friends.

Education Is Vital Factor To Health in Asia

The high priority of health education is well recognized in many areas of the world which heretofore have been isolated from scientific progress, according to Jennelle Moorhead, M.S., a recent traveler to many Asian lands. Mrs. Moorhead is associate professor, general extension division, Oregon State System of Higher Education, Eugene, Oreg.

Successful introduction of sanitation procedures in the Far East and Middle East, Moorhead said, hinges on helping Asiatic people gain an understanding of the relationship of disease to water contaminated by indiscriminate disposal of human excreta.

"The preservation and acceptance of what we in the United States consider fundamental environmental sanitation concepts is not a simple matter in Asiatic countries," she said. "The educational problem for them is complicated almost beyond our understanding. The health concepts we have accepted and which should be taught may violate or challenge religious, cultural, or philosophical views. No matter how advantageous environmental sanitation and health education facts may appear to those of us in Western civilization, if they are to be accepted . . . they will have to be related to the values and attitudes underlying the practices of each locality in each country. New ideas must be linked to traditional beliefs. They must not violate religious beliefs or folkways which vary from country to country and from village to village within countries."

Adult health education and school health education will need to proceed simultaneously to avoid alienating a child from his family and its cultural pattern, she believes. School health education has first to overcome the burden of illiteracy.

"I returned from my study trip with deep respect and admiration for the Asians who are attempting to solve their health and education problems and with an intense feeling of pride in the American educators and public health officials who are giving technical advice and assistance," Moorhead said.

The strong PTA movement in Japan and Turkey and the village development program in India and Pakistan are the most notable developments in the seven countries visited, she said in reporting the following.

Japan

Japan's health and education programs show a strong degree of westernization. Health instruction is taught in secondary schools by teachers whose preparation included training in health education. School health services are provided by nurses and physicians employed by the public schools. City elementary schools have health rooms with dental chairs.

The health of Japanese children will be greatly influenced by their aggressive parent-teacher organization, whose membership of 13 million has been instrumental in teaching democratic procedures. This movement and similar organizations have been helped to function successfully by the Division of Social Education, which is part of village, city, and prefectoral government structure.

Thailand

Thailand's greatest needs are in environmental health, malaria control, medical care, medical education, and organization of health departments. Despite production of abundant food there is malnutrition. The use of eggs, chicken, fish, and unpolished rice in the diet must be encouraged. Food is served with no awareness of the germ theory of disease.

A division of school health and a division of health education in the Ministry of Public Health are developing a long-range health education program. The emphasis will be on production of a basic curriculum for teacher training, carefully related to Thai culture and community health problems. School sanitation surveys are to be scheduled. Thai schools must be open enough to allow free circulation of air, closed enough to keep out rain, and set high enough to allow water to flow under. Rural schools do not have a safe water supply or even the old-fashioned privy.

India

Cementing all programs for the improvement of living in India and Pakistan is the village development program which involves 85 percent of the population. The village worker is the key person, trained to work with the village leaders. An allied development is the program of social education and instruction in village handicrafts so that young farmers are taught handicrafts that will produce income for their village.

Training is planned so that workers and the villagers advance in knowledge together. Both receive some rudimentary training in sanitation and some information on better agricultural methods. The village worker is oriented in basic techniques of village work as well.

The present major health focus is on environmental sanitation. One hundred programs encompassing 30,000 villagers are under way to construct 90,000 safe wells. Everyone who works on this program will be a potential health educator.

Cultural attitudes and costs complicate the building of toilet facilities. An oriental squat plate with a water seal that can be supplied at low cost by the government seems to be the answer for a latrine that meets sanitary and folkway requirements. The pride of ownership should increase its use.

Pakistan

A visit to refugee camps in Pakistan and India helps one realize the magnitude of the problems created by partition of the countries in 1947.

Only 379 nurses were left when partition necessitated the departure of the non-Moslem nurses. Some 300 nurses have since been trained, but there is still only 1 nurse to 100,000 population.

Today there is a nursing council to promote the training of nurses. Two hundred health visitors have been trained in the four centers established for training in maternity and infant care.

In Karachi, where the first school physician in Pakistan was appointed in 1954, school health work will start in the secondary schools, where the enrollment is 25,000. Of 2,000 examined, 40 percent were healthy. Vision defects are frequent, however. Presently there is a vigorous campaign to vaccinate against smallpox. Some 5,000 are vaccinated each month. An inservice training program of teacher observation of the school child is to be inaugurated. The health habit card is to be developed.

Iraq

In Basra the first local health department in Iraq will train personnel to staff local health departments when established. Formal training is provided for sanitarians, health educators, and health visitors. The equivalent of a high school education is required for health visitors, who then receive a year's training in nursery care, sanitation, personal hygiene, and school and child health.

Health visitors will be used instead of nurses. Girls shun nursing as a profession because of the still strong moral feeling against women taking part in public life. Health visitors must always go in pairs since a lone girl never enters a strange home. Only a few girls have been persuaded to enter this urgently needed field.

School health education depends largely on the success of the plan to assign health visitors to each school to carry on many of the functions of a school nurse.

Health instruction in Basra's two secondary schools, one for boys and one for girls, relates largely to the structure and function of the human body. Some sex education is included. Special emphasis is placed on diseases of the eye, malaria, and venereal disease. All secondary teachers must take 3 years of hygiene. Health instruction is not well established on the elementary level.

Lebanon

Lebanon epitomizes all of the school problems found in the other countries. Education is confronted with dual religious viewpoints (Moslem and Christian), dual educational philosophies (French-Lebanese and American-British), and dual education systems (government and private). Technical assistance has been limited to working with the public schools.

An important and popular school health project was instituted by the government in March 1953. Among other benefits, 150 public school teachers who had never attended any meetings of any kind during their career attended one of four regional school health conferences or a national conference held earlier.

The demonstration elementary school established outside Beirut in 1952 is the first in the Middle East in which both English-speaking and Arabic-speaking students are in attendance with equal privileges. A Lebanese nurse and a part-time Lebanese pediatrician are employed. Each child has two physical examinations a year with followup home

visits. As a result of the home visits, some drastic changes in home sanitation and health consciousness have occurred.

Turkey

The Turks have better sanitation and water supply than most Asiatic countries. In the public schools, routine immunization against smallpox, diphtheria, and typhoid fever are given by the Ministry of Health. The Turkish Tuberculosis Association gives the BCG immunizations and does the followup in home calls. Health instruction and physical education are both required in the junior and senior high schools. The girls' junior high school in Istanbul is the first Turkish school to use the modern community-oriented project type of school program, which was brought about by their parent-teacher association.

Laboratory Developments . . .

Focus on Community, Laboratories Urged

Public health laboratories, which have set the pace for public health programs in the past, have an opportunity to call the turn again, to shift the plane of focus from the microbe and the individual patient to the community as a whole, said Edward G. McGavran, M.D., M.P.H., dean of the School of Public Health, University of North Carolina.

Such a shift will support the attack on heart disease, cancer, mental disease, accidents, alcoholism, allergy, diabetes, glaucoma, rheumatism, and arthritis. It would promote the psychological and physical health of the environment, for both young and aged. It would stress rehabilitation no less than prevention, he said.

Changes in Practice

The present emphasis of public health laboratories on biological production and clinical examinations, he said, must be seen in historical perspective. The public health laboratories were born when clinical medicine shifted from the diagnosis of symptoms to the diagnosis of disease. As clinical science improved, and as investigations unfolded the complexities of the conflict among the forces of health and disease, attention shifted from diagnosis of disease to diagnosis of man. The case of malaria or rheumatic fever, he said, became "an individual, a physical, emotional, and social entity." This shift was not one of function, service, or technique, but one of focus. Today, the focus is shifting again, he averred, to the scientific diagnosis and treatment of the community as an entity.

With such a shift in focus, the responsibility of the public health laboratory to the entire population implies certain specific changes in practice. Traditionally, public institutions provide for the needs of the people when private initiative is absent. As private enterprise grows to meet the need, public services are directed to other unmet needs. If it is not necessary for the health department to provide diagnostic services itself, it is still incumbent upon it to see that the private services provided are the best that can be supplied. If private laboratories are producing biologicals to meet the need, the public laboratory can then reduce its own output and give more attention to other community needs. Less time would then be given to direct laboratory service and more to supervision, licensing, consultation, and training to assure the excellence of laboratory services.

More important, he said, was the opportunity to extend the benefits of laboratory services to all: to have less concern about how many tests were done and more concern about how many who needed such a test did not receive it; less concern with the number of negative and positive tests and more concern with the number of false negatives and false positives; less concern with the number of tests available and more concern with their actual use. The criterion of community need would apply, he said, whether to cytological screening for uterine cancer or to toxicological detection services for industrial employees.

Community Diagnosis

To maintain their traditional leadership in public health practice, McGavran said, directors and key personnel in laboratories must be prepared to serve as "the doctor of the body politic." It is not sufficient for them to be experts in laboratory science. Beyond that essential background, they must know their community, its organization and power structure, its epidemiology and physiology. They must share in community diagnosis and know the resources and contributions of others in the public health profession. In short, they should be concerned first with public health and second with the laboratory.

It is a need among all disciplines in public health, he stated, to show less concern with their individual background, schooling, training, or origins and to show more concern with the job and status of the public health profession as a whole. It will not be easy to recruit qualified personnel for public health practice unless there is appreciation of the concept of public health as a calling in itself, he said. This concept of public health he pictured as "a distinctive profession of co-equal people from different disciplinary backgrounds with a specific focus on the community."

Such a concept challenges the best minds of young people in all health professions, he said, because ad-

vances in community or public health in the next hundred years will compare with advances of the past century in clinical sciences. But he said the challenge could not be voiced until those now working in public health accept the concept that theirs is a distinctive profession with a distinctive body of knowledge and a distinctive competence.

In essence, he said, that concept results in fixing the plane of focus on the community and treating the "patient community" as the "patient individual" hopes to be treated by a physician.

New Biochemical Methods Needed by Laboratories

The need for new biochemical techniques for diagnosis and investigation of diseases in possible emergencies as well as in normal circumstances was described by Gerald R. Cooper, M.D., Ph.D., chief, Hematology and Biochemistry Section, Communicable Disease Center, Public Health Service, Atlanta, Ga.

Needed particularly by the public health laboratory are specific and dependable diagnostic and screening tests for each disease, purified immunological and metabolic reagents for improvement of diagnostic tests, and methods for the detection of abnormal host resistance in communities. Other recommended fields of endeavor in biochemistry, he said, are standarization of, and training in, newly discovered tests and reference diagnosis in rare and exotic diseases.

Further studies of the biochemical nature of disease agents and of host reactions should lead to development of specific tests for all diseases, he said. He was of the opinion that rapid and specific identification of organisms might be accomplished by enzyme, fluorimetric, or infrared techniques, and that particular host reactions, especially metabolic, might be used to devise rapid diagnostic measures if such reactions could be determined.

Also, studies should be continued, he said, upon the biochemical reactions in diseases with altered or abnormal immune responses when no specific test is available to detect or to measure the pathology. Another test needed is one that can reveal sequellae or residual damage from diseases such as brucellosis and hepatitis.

He mentioned cat scratch fever, sarcoidosis, and amebiasis as examples of diseases for which dependable diagnostic and activity tests require purified antigenic material, particularly serologic and skin tests. If antigens, antibodies, and metabolic products could be isolated from impurities, many false test results could be prevented, he said.

Concerning the need for new means of detection and measurement of host resistance in communicable diseases, he called attention to the significance of gamma globulin. A high incidence of hypogamma-globulinemia in a population would indicate the possibility of abnormal spread of disease in epidemics and increase the extent of disaster under environmental stresses. This may be especially important in atomic bomb disasters, he said, explaining that both cellular and gamma globulin properties and content are altered by irradiation. Such alteration might make displaced persons abnormally susceptible to infectious agents.

Most pathologists have little time to train personnel and standardize performance of new biochemical tests. Cooper indicated that training such personnel and standardizing new tests, along with biochemical reference diagnosis in rare and exotic diseases, would represent a substantial contribution to laboratory medicine.

New C. diphtheriae Test May Help Small Labs

A test tube method for the determination of *Corynebacterium diphtheriae* toxigenicity has recently been developed. It may be suitable both for mass testing and for performance in small laboratories unable to keep animals for fresh serum, according to Richard V. Walker, M.P.H., and Margaret I. Beattie, Dr.P.H., M.A., of the University of California School of Public Health, Berkeley, Calif.

Though all in vitro tests for *C. diphtheriae* virulence utilize the same ingredients, this simplification of conventional techniques takes less time and requires less antitoxin, serum, agar base, and material to be tested than petri dish versions. They said its sensitivity and specificity respectively were 98.4 percent and 98.9 percent, as ascertained by testing 190 strains previously tried in vivo.

A minimum 1.25 flocculating units per milliliter of preformed toxin were detectable. All components, except a minute amount of fresh serum agar, may be stored for 2 weeks prior to use, and most of the serum needed may be commercially prepared.

Described as patterned after a modification of the Oudin method for the detection of antigen-antibody reactions in agar gels, the new method employs a small test tube containing two layers of ingredients. The top layer is 0.4 ml. of 20-percent, fresh, unhemolyzed rabbit serum agar, into which reactants diffuse from an inoculum placed on its upper surface meniscus center and from the bottom layer. Five to six units of diphtheria antitoxin in 1.00 ml. of 20-percent normal rabbit or horse serum agar constitutes the bottom layer, and the inoculum consists of *C. diphtheriae* organisms of suspected toxigenicity.

If toxin is produced by these organisms, concentrations of toxin and antitoxin increase independently in the diffusion zone. A white disc of precipitate appears where the ratio of these concentrations first approximates an optimum for flocculation. The test is positive if this occurs within 48 hours after inoculation of the tube medium.

The inoculum is obtained by pushing the circular part of a bacteriological loop, bent to form a right angle with the shaft of the instrument, over the surface of Loeffler's medium cultures or from colonies on blood-tellurite agar plates. In the latter case, a wire inoculating needle with an almost 90° bend one-eighth of an inch from the tip is used.

Walker and Beattie found that the inoculation must be accomplished by touching without breaking the surface of the test medium. This technique, however, affords a thinner margin for error than analogous, streaking procedures in earlier test processes.

They also agreed other technical difficulties inherent in the test might be reduced by centrifuging constituents for clarity when necessary, by assuring the sterility of the antitoxin reservoir serum, and by retesting negative strains in vivo.

New Techniques Step Up Smallpox Vaccine Output

Yields of avianized smallpox vaccine have been increased threefold and the processing time has been reduced by recent changes in production methods.

Reporting the new techniques were Philip J. Forsyth, M.A., and E. B. M. Cook, M.A., immunologists with the Texas State Department of Health, Austin.

Injection of the seed virus directly into the allantoic cavity of an embryonated egg through the air sac end produces vaccinal lesions that are scattered throughout the chorio-allantoic membrane, and the entire membrane can be harvested for vaccine use, they reported.

In the Reid method of creating a false air sac over the embryo and injecting the seed virus into the "dropped" area, only a small portion of the membrane, 20 by 30 mm., was infected and harvested.

The average amount of vaccine produced per egg inoculated by the old method was 1.5 ml. By the allantoic cavity method, the average yield is 5.2 ml. of vaccine—an increase of from 60 to 200 individual vaccinations per egg, they said.

The allantoic inoculation process is also a time and work saver, they reported. Done quickly and easily with an automatic pipetting machine, it takes only 6 man-hours to inoculate 600 embryos compared to the 24 to 30 man-hours for the Reid method.

Definitive Potency Test

Tying in with increased vaccine volume was a suggested method of measuring more accurately the potency of the harvested vaccine, thus allowing more definitive dilution at a considerable saving in the manufacture.

Egg titration, they said, provides an accurate measure of the number of infectious particles of virus present in a given lot of vaccine. Specially prepared and diluted vaccine material is inoculated onto the chorio-allantoic membrane of 11- to 12-day-old embryonated eggs by the triangular-flap method. After a 3-day incubation period, the infected portions of the membranes disclose large and easily counted pocks under a dissecting microscope. Each pock is assumed to be the result of the growth of one infectious particle of vaccinia virus. The average number of pocks present for each dilution inoculated is determined, and from these counts the number of infectious particles present, or the titer of the original material, is calculated.

With a vaccine of known and predictable strength, the vaccine pulp material can be diluted as required, they said. It is now common practice, they explained, to dilute all vaccine pulp 1 : 5, regardless of the actual virus titer. Under this arbitrary dilution method, much of the vaccine greatly exceeds the required strength or fails to pass the standard potency test and must be discarded.

In their experiments, Forsyth and Cook found that a virus concentration of 20 million infectious particles per milliliter of vaccine suspension, read by the egg titration method, was successful in every Force and Leake rabbit scarification test. The rabbit test is the established method of testing vaccine potency.

On the basis of egg titration results, they were able, in many instances, to dilute infected membrane up to 1 : 20 and thus increase the vaccine from twofold to fourfold.

The avianized vaccinia virus retains its stability equally well in dilute and in concentrated form, they found.

Three Trichinosis Tests Are Rated in Study

The complement fixation and flocculation tests for trichinosis were found to give comparable and valuable results superior to the precipitin test, according to four members of New York City's Health Department.

Harold T. Fuerst, M.D., epidemiologist, Morris Greenberg, M.D., director, bureau of preventable disease, and Daniel Widelock, Ph.D., assistant director, and Annie E. Thomson, M.D., bacteriologist, bureau of laboratories, conducted the investigations.

The choice of either the complement fixation or flocculation test, or both in combination, may be based on individual considerations, they said, although the use of the two tests in combination does not generally increase diagnostic accuracy. However, they continued, when one test is doubtful, a positive or negative result with the other may aid in appraising the clinical findings.

Study Conditions

During 1952 to 1954, concurrent determinations of complement fixation and flocculation tests for trichinosis were performed on 437 serum samples submitted from 243 persons with active trichinosis and on 425 serum samples from 343 persons with no clinical evidence of the disease. The presence or absence of trichino-

sis in the 586 persons was verified by epidemiological investigations, they explained.

Single serum samples submitted for routine tests for syphilis from 321 persons were also tested for trichinosis by the two tests as controls, they stated. No clinical or epidemiological investigation of this group was made, they said.

Among the 343 persons whose clinical diagnosis showed no infection, 69 percent of the complement fixation tests and 65 percent of the flocculation tests were persistently negative, they related. Of the 243 persons with trichinosis, 64 percent of the complement fixation tests and 59 percent of the flocculation tests gave four-plus results. The differences between the tests were not statistically significant, they said.

Titers from plus-minus to three-plus inclusive, have little, if any, diagnostic significance. The percentage of such intermediate reactors was consistently greater with the flocculation test than with complement fixation, they reported.

Maximum reactivity with the two tests appeared at the fifth to sixth week after the onset of trichinosis. The specificity of either of the two tests was markedly better than for the precipitin test, they declared.

Biological False Positives Found by New TPCF Test

A new test may soon provide State laboratories with a simple method for detecting biological false-positive reactions in serum tests for syphilis, reported Harold J. Magnuson, M.D., M.P.H., chief, Operational Research Section, Venereal Disease Program, Public Health Service, and Joseph Portnoy, Ph.D., bacteriologist, Venereal Disease Experimental Laboratory, Chapel Hill, N. C. Magnuson and Portnoy believe that the new test "will be as helpful as any other single test procedure now available."

The new *Treponema pallidum* complement fixation test (TPCF) apparently is as specific as the tests in general use, Magnuson and Portnoy stated. No single test technique will measure all of the antibodies of syphilis, they said, but one or more of the treponemal tests may reduce the margin of diagnostic error, even though they will never eliminate it.

The principle of the test, they said, is simple. Virulent *T. pallidum* is obtained from infected rabbit testes, and the treponemes are concentrated by differential centrifugation. The lipid fractions are removed by successive acetone and ether extractions, and the active proteinlike antigen is then removed from the dried treponemes by a 0.2-percent solution of sodium desoxycholate. The resultant antigen is used in a conventional complement fixation test similar to the fifth volume Kolmer technique.

Test Sensitivity

In primary and secondary syphilis and in congenital syphilis, the TPCF test was more reactive than the *Treponema pallidum* immobilization (TPI) test; in syphilis of the central nervous system, the TPI test was more reactive than the TPCF test; and in latent and cardiovascular syphilis, the tests were about equally sensitive, Magnuson and Portnoy reported.

They said that, in 266 patients assumed to have biological false-positive reactions, serologic tests for syphilis (STS), TPI, and TPCF tests agreed in only 33.5 percent of the cases, but the TPI and TPCF tests agreed in 94 percent. In 78 "definite" false-positive reactors, TPI and TPCF tests agreed in 98.7 percent of the cases, and agreement between the two tests among 188 possible false-positive reactors was 92 percent.

In untreated early syphilis, TPCF and STS results were somewhat parallel; in the later stages of the disease, the correlation between results of TPI and TPCF tests was much higher than between either treponemal test and STS, Magnuson and Portnoy stated. They emphasized, however, that neither treponemal test measures reagin, so that correlation between TPCF and STS results is not due to reagin cross reactivity.

In treated early syphilis, the correlation between TPCF and TPI tests is somewhat greater than the correlation between the treponemal tests and STS. In treated late syphilis, agreement between the two treponemal tests was less satisfactory than in untreated late syphilis.

Magnuson and Portnoy reported that two manufacturers are beginning to produce TPCF antigen and that as soon as the antigen is more generally available, evaluation of the test will advance more rapidly.

In conclusion, they said that if the present trends of production continue, any well-run laboratory will be able to perform the TPCF test and that "the results should be highly useful to State laboratories and clinicians in helping to resolve some of the perplexing diagnostic problems that arise in the serodiagnosis of spyhilis."

Study Shows Reliability Of STS and TPI Tests

The reliability of standard serologic tests for syphilis (STS) and the value of the *Treponema pallidum* immobilization (TPI) test in so-called questionable cases of syphilis were confirmed by a study conducted at the University of Michigan Hospital.

The study and conclusions were reported by Elizabeth B. McDermott, Lenoir B. Stewart, M.S., and Reuben L. Kahn, Sc.D., of the serologic laboratory, and Albert H. Wheeler, Dr.P.H., and Ella M. Brandon, A.B., of the TPI research laboratory, department of dermatology and syphilology, University Hospital, University of Michigan, Ann Arbor, Mich.

Various laboratory workers have reported that when clinical findings and STS results do not agree, as many as 40 percent of positive STS have been negative by the TPI test. These findings led to the belief that standard blood tests gave large num-

bers of false-positive results and hence were not reliable.

Kahn vs. TPI Test

At the University Hospital, where the Kahn test is used routinely, TPI tests are done free of charge whenever they are requested by the physician, McDermott and her associates said. Between September 16, 1954, and July 1, 1955, requests were received for TPI tests in 78 of 31,545 cases on which Kahn tests had been done. The results of these tests were:

Kahn positive, TPI negative	23
Kahn negative, TPI positive	6
Inconclusive (TPI and Kahn)	10
Agreement between Kahn and TPI tests	39

The 23 false-positive tests, 29 percent of the 78 tests performed, indicate that the TPI test is a valuable supplement to standard blood tests when clinical findings and standard blood tests disagree, the research group stated. However, these same 23 false-positive reactions represent only 0.07 percent of the 31,545 cases tested, which in turn indicates that the standard blood tests are highly reliable in routine medical practice. The six Kahn negative-TPI positive reports cannot all be considered as false negatives, they said, "in view of the persistent positivity of the TPI tests in long-standing, adequately treated cases."

False Positives

There is a continuing need for watchfulness for false-positive reactions, they stated. Many false-positive reactors who have been under observation for a number of years have been diagnosed as either syphilitic or nonsyphilitic in the 6 years since the TPI test became available, and a decrease in the incidence of suspected false-positive serologic reactions may be expected from now on. However, the reduction in the prevalence of syphilis may be resulting in an apparent rise in positive blood test results in nonsyphilitic cases, they warned.

They also emphasized that false-positive reactions are false only in relation to syphilis. Such reactions may have clinical value in other diseases, particularly in the collagen diseases, such as disseminated lupus erythematosus, periarteritis nodosa, rheumatoid arthritis, and rheumatic fever, they concluded.

Minnesota Study Compares Bacteria Count Methods

The standard plate count (SPC) is a more rigorous and discriminating bacteriological test for grading raw milk than either the direct microscopic count (DMC) or the laboratory pasteurized count (LPC), according to results of a study made in the Minneapolis-St. Paul milk shed.

James J. Jezeski, Ph.D., and J. C. Olson, Jr., Ph.D., associate professors of bacteriology, department of dairy husbandry, University of Minnesota, and W. C. Lawton, Ph.D., laboratory director, Minneapolis-St. Paul Quality Control Committee, reported on the comparative studies to determine whether the LPC alone could be used for grading raw milk.

On the basis of 7,949 milk samples from about 750 producers between

Relative agreement between three grading methods in the detection of unsatisfactory milk samples, Minneapolis-St. Paul milk shed, June 1954–May 1955

Period	Number unsatisfactory by—	Detected by—			
	DMC [1]	SPC [2]		LPC [3]	
		Number	Percent	Number	Percent
June–August	123	113	92	32	26
September–November	53	49	92	4	7. 6
December–February	37	24	65	4	11
March–May	85	60	71	19	22
12 months	298	246	83	59	20
	SPC [2]	DMC [1]		LPC [3]	
June–August	535	113	21	119	22
September–November	250	49	20	49	20
December–February	142	24	17	26	18
March–May	153	60	39	30	20
12 months	1, 080	246	23	224	21
	LPC [3]	DMC [1]		SPC [2]	
June–August	190	32	17	119	63
September–November	91	4	4. 4	49	54
December–February	50	4	8. 0	26	52
March–May	95	19	20	30	32
12 months	426	59	14	224	53

[1] Direct microscopic count. [2] Standard plate count.
[3] Laboratory pasteurized count.

June 1954 and May 1955 collected at monthly intervals, they reported the SPC at 200,000 bacteria per ml. detected 13.6 percent of the unsatisfactory samples, DMC at 200,000 per ml., 3.7 percent, and LPC at 30,000 per ml. detected 5.4 percent.

Of the 1,329 samples unsatisfactory by any one or the various combinations of methods, SPC detected 81 percent; DMC, 22 percent; and LPC, 32 percent. SPC provided the best detection of various types of unsatisfactory samples and was considered to be the only method which might be used as a sole grading test, they commented.

The relative agreement between the three methods and seasonal variations are shown in the table. Using the various paired combinations, the SPC-LPC combination missed 3.2 percent of the unsatisfactory samples, DMC-LPC missed 50 percent, and DMC-SPC missed 15 percent, they said.

Methodology and Results

All tests and procedures followed the Standard Methods for the Examination of Dairy Products, 10th edition. Samples were taken directly from the weigh tank as the milk was received. DMC slides were counted with microscopes having a 500,000 factor, with 50 fields counted routinely.

Further detailed studies to confirm or refute the data from this study are needed, they declared. Serious consideration should be given to: (*a*) the true worth of the direct microscopic count; (*b*) the establishment of rigidly controlled studies to determine the efficiency of the laboratory pasteurized count in other milk sheds; (*c*) the question of whether a sole LPC grading program would result in a materially increased product quality, and (*d*) the question of whether an LPC grading program alone would impose unnecessary burdens on the producer.

Reducing the LPC grade level below 30,000 will result in the detection of more unsatisfactory SPC samples, but the LPC standard must be reduced below 5,000 to detect about 50 percent of the unsatisfactory SPC samples, they asserted.

Phosphate-Bearing Water No Obstacle to New Test

A method for determining fluoride concentrations ranging from 0.2 to 2.0 p.p.m. in water supplies containing phosphates up to 2.0 p.p.m. was reported by the laboratory services section of the Connecticut State Department of Health, Hartford.

According to Earle K. Borman, M.S., chief of the section, and chemists Barbara G. Lang, B.S., and Omer C. Sieverding, B.S., the Connecticut test has a higher degree of accuracy than older methods.

Another advantage over the Lamar test, most widely used in regulating fluoridation operations, is that minor variations in room temperature do not affect the rapid development of maximum color in the samples.

Although both tests are subject to interference from substances other than phosphates, the Lamar test, a modification of the zirconium-alizarin determination, is not sufficiently accurate, even after a single distillation of the sample, to permit reliable assay of fluoride concentrations which depart by more than 10 percent from 1 p.p.m. when phosphates are present. Furthermore, any drop below 1.0 p.p.m. in fluoride content introduces additional errors in the Lamar test when the phosphate content is as high as 0.5 p.p.m.

The new test was described as based upon the titration of unbound thorium using chrome azurol S indicator. Five milliliters each of indicator and buffered thorium nitrate solution are added to a 50 ml. aliquot sample in a Nessler tube. The color so obtained is suitable for spectrophotometric determination of the aliquot. This is accomplished by comparing its transmission value at 595 mμ with those on a curve plotting such values for solutions of known fluoride concentrations ranging from 0.2 to 2.0 p.p.m.

The buffered thorium nitrate solution consists of 4.75 parts buffer solution and 0.25 parts thorium nitrate solution. The buffer solution is prepared by diluting 22.7 gm. monochloroacetic acid with 4.8 gm. sodium hydroxide to 1,000 ml. The thorium nitrate solution is 3.5000 gm. thorium nitrate tetrahydrate diluted to 500 ml. It was emphasized that the success of the test is contingent upon the precision attained in measuring this latter reagent. Thorium nitrate must remain in excess after reaction with the fluoride ion.

If a spectrophotometer is not available, aliquots may be compared on a color basis to freshly standardized knowns.

Medical Economics . . .

Improve Or Be Replaced Hospitals Advised

As chief of the Nation's largest municipal hospital system, Basil C. MacLean, M.D., commissioner of hospitals, New York City, advised voluntary hospitals that unless they improved their organizations and public services they would be supplanted more and more by governmental institutions. Although he himself favors a continuing partnership of government with voluntary institutions, he said, the continuance of that partnership depends on fuller recognition by the voluntary institutions of their public obligations.

The budget of his own municipal department includes more than $100 million annually for operating city institutions and $20 million for the care of public charges in voluntary hospitals. In the past 20 years, the city contribution to voluntary hospitals for its "so-called" charges, he said, has increased from $2.75 to $14 a day, and there is pressure to raise the amount to approximate more nearly their ward costs of $20 a day or more.

The "sagging economy" of the voluntary hospitals has been supported by the growth of the voluntary health insurance plans, he said, but it has not spared them from the necessity of seeking still further government aid. To warrant such support, with the passing of "the tin-cup method of meeting hospital deficits," he said that voluntary institutions will be obliged to operate in a businesslike way to provide health services at a reasonable cost.

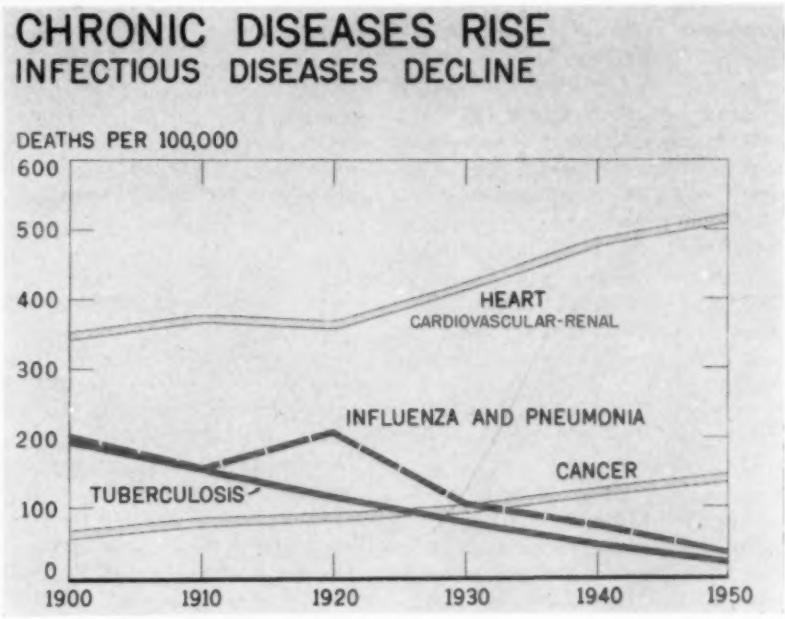
A Public Voice

He challenged the notion that the tax-exempt status of the hospital derives from its "nonprofit" status rather than from the extent of community service offered. Considering that the public investment in hospitals amounts to more than $50,000 for each licensed doctor in the United States, he questioned the right of the medical entrepreneur to set policies in voluntary hospitals without public interference and to deny the public a voice in determining prices and methods of payment of hospital services.

Admission policies also received heavy criticism from the commissioner. He charged that even when there is no question of compensation from the city or from insurance plans, the resident staff often rejects interesting and obscure cases in favor of more glamorous but simple surgical cases which assuage the "scalpel itch."

Multiple bills and fees associated with hospital services were compared by MacLean to the outmoded fashion of paying separate tuition fees to each professor in the medical school. "Those who insist on a $5 bill passing from the patient to a doctor for each urinalysis done by a technician," he said, "are pushing the public to demand governmental control." He said the public is disturbed by squabbles over what is and what is not hospital care and "by the confusion and cost of a system in which the doctor competes with the hospital for the patient's pocketbook."

"More and more," he asserted, "the question is being asked—whom does the voluntary hospital actually serve—the patient or doctor?"



Chronic Services

To justify additional governmental help, he recommended that voluntary hospitals be willing to admit a fair load of medically indigent cases even if city subsidy does not meet the full cost. He said they must also give thought to establishing wings or annexes for chronic patients, including those with cancer and mental illness, with provisions not only for teaching material but for terminal cases. Otherwise, he warned, a further assumption of such responsibilities by government will ensue.

It makes more sense, he said, for cities to keep voluntary hospitals functioning effectively than to compete with them. "Government should step in only when voluntary effort fails," he said, "but it must be honest voluntary effort, dedicated to public service . . . and not controlled by predatory interests."

HIP Evaluates Its Services, Grades Quality of Care

The scoring system developed in the HIP evaluation of group practice clearly identifies the physician who provides good medical care, according to Edwin F. Daily, M.D., and Mildred A. Morehead, M.D., M.P.H., vice president and associate medical director, respectively, Health Insurance Plan of Greater New York.

To date, 18 of the 29 medical groups affiliated with HIP have been evaluated in the study, which began in 1954.

The HIP evaluation produces an objective evaluation of the management of selected cases of serious illness by an impartial review and dis-

cussion of clinical records, Daily and Morehead reported. Altogether, 80 percent of the plan's services will be assessed.

As a result of classifying group physicians according to average scores within the point ranges of 76–100 (good), 61–75 (adequate), 46–60 (below average), or 0–45 (poor), the services of some physicians with low ratings have been terminated, so effective is the index, Daily and Morehead also reported. They believe it can be adapted to other medical care plans.

Basic Factors

The basic problem in methodology, the HIP officers explained, was to determine the type of material to be studied, the criteria for evaluation, the methods of recording information, and the relative weights to be given to the various factors. The cases selected for study are those in which the diagnosis on record at the central HIP office suggests the need for fairly extensive diagnostic workup.

The evaluation encompasses a review of the clinical records in the departments of medicine, surgery, obstetrics-gynecology, and pediatrics within each medical group. Evaluation of radiology and pathology departments includes reviewing X-ray films and the group radiologist's reports and reviewing pathology charts and procedures as well as making control comparisons of specimens and tests. Study of preventive services is based on the presence or absence of expected preventive procedures.

A recognized specialist who is not affiliated with HIP visits the group physician's office, taking with him a list of the patients whose case management he intends to analyze. He reviews the clinical records, guided by criteria for evaluating the items to be rated, then rates and summarizes the handling of each case on a case work card. The possible ratings *a*, *b*, and *c* correspond to satisfactory, fair, and poor.

The interviewer credits the group physician for any information he may add during their subsequent discussion of each case, when the physician is also questioned about hospitalization policies, workloads, hours on call, and other factors influencing the operation of the group in which he practices.

Scores Averaged

The clinical material obtained from the case studies and the interviewer's ratings are checked for accuracy, and numerical weights for scoring are assigned to the case work evaluations. The maximum possible score for the management of a single case, 100, is distributed among the three major areas studied for each case: 30 for the records section on the case card, 40 for diagnostic workup, 30 for treatment and followup.

At the conclusion of the study of each medical group, the scores are averaged, to obtain ratings for each physician, each department, and each group. Findings show that the averages of the scores provide an effective index for comparing medical groups and services. When the separate scores for any of the 16 items on the case card are averaged item-wise, they reveal areas of strength and weakness within the medical group. The range of scores for the cases of each physician is generally narrow.

The study does not end with the analysis of the scores. It continues with special presentations of findings at several evening sessions for all members of the medical group and with an intensive followup by a special team of consultants who advise the group's executive committee on how to carry out the specific recommendations of the medical team.

As a result of the study, many specific examples of improved methods of practice by individual physicians have been noted. Improved use of consultation and diagnostic services available in group practice have been repeatedly observed. A better understanding of the potentialities of teamwork in group practice is also evident.

All recommendations concerning laboratory and X-ray departments, usually minor, have been promptly corrected. Rechecks of clinical records a few months after evaluation show much improvement. Chiefs of the various departments, some for the first time, have assumed full responsibility for directing the work of their associates and integrating their service with other departments.

The cost of the study has been about $60,000 per year or about 15 cents per insured person. Future studies should take into consideration such factors as investigation of more cases of minor illness to determine if more serious illness existed, changes in scoring so that an unsatisfactory grade in one category would prevent full credit in the other two, direct observation of a physician's work, evaluation of doctor-patient relationships, and average time per office service.

Care of Long-Term Illness Will Require New Funds

Adequate care of patients with chronic illnesses cannot be financed entirely from personal savings, nor will redistribution of existing funds for personal health services be sufficient to cover the cost of medical care for this group.

New money must be provided through higher insurance premiums from currently insured individuals, larger contributions by employers, and subsidies from various levels of government.

These were the points emphasized by Odin W. Anderson, Ph.D., research director, Health Information Foundation, New York, N. Y., in his discussion of the complex problems in financing long-term illness.

The recent increase in queries about the cost of treating diseases such as cancer and poliomyelitis seems to indicate that the problems accompanying them are becoming so

pressing that consideration is now being given to particular chronic diseases as well as to age groups and other special groups in the population, Anderson stated.

He based his discussion on the following assumptions and observations gleaned from the literature and recent conferences on chronic illness:

1. No family should be forced to reduce drastically its usual standard of living because of the cost of personal health services. Adequate insurance coverage should be available to self-sustaining families to meet such unpredictable costs.

2. At present families must be reduced to a subsistence level before they can benefit from tax-supported medical care programs. If a normally self-sustaining family above subsistence level is to remain self-sustaining, it must have access to adequate health insurance.

3. Long-term illness, a characteristic of the growing population over 50 years of age, has increased greatly during the past 50 years. Existing facilities, professional health personnel, and organization methods are not geared to the complex problems of long-term illness.

4. Similarly, except for certain illnesses such as tuberculosis and mental disease, existing methods of financing are not geared to the care of the patient with long-term illness.

5. Adequate services for the care of these patients cannot be financed from savings—liquid assets, personal property, and other personal effects—and from other assets which are regarded as the birthright of American citizens.

6. The prevailing benefits of voluntary health insurance today are hospital care and physicians' services in the hospital. For long-term illness, a broad range of services considerably beyond these benefits needs to be provided and financed.

7. Long-term illness is always expensive. The expense will be borne by the patient, his family, the insured group, or the total population through taxes.

8. Long-term illness involves loss of income if the wage earner is ill, expenditures for medical care, and additional expenditures for personal needs or services. Loss of income is proportionately a larger consideration in a long-term illness than in a short-term illness.

9. Because long-term illnesses have a relatively low incidence, it is more difficult to interest individuals in the need for insurance to cover costs of these expensive illnesses than in insurance for short-term illnesses.

10. Voluntary health insurance agencies are experimenting with major medical contracts to cover the costs of expensive illness, including long-term illness. Expansion of such contracts for employed persons can be expected to increase.

11. New mechanisms are needed and are being explored to underwrite adequate health insurance for usually ineligible, high-risk groups, such as the aged and the indigent.

12. New money will be required to finance adequate health services, and a redistribution of existing expenditures for personal health services will not be sufficient.

13. Therefore, higher premiums from currently insured persons, larger contributions from employers, and subsidies from various levels of government will be necessary.

14. During the next 10 years, major emphasis should be on increasing available finances for the care of patients with long-term illness. Reorganization of services may follow but will take longer. The amount and methods of financing and of organizing and providing services are directly related.

Present Costs

Costs for medical care range from 0 to 50 percent of family income and average approximately 5 percent of family income, Anderson reported. The lower the income, the larger the percentage spent for personal health services, Anderson pointed out.

At present, the annual cost of personal health services averages $207 per family, Anderson stated. Some costs for chronic illness are undoubtedly included in this figure, he said, although it is impossible to separate them from the total. However, 16 percent of the total costs for all families were in amounts of $400 and over, distributed as follows:

Medical costs in excess of—	*Percent of families*
$400	16
500	11
750	4
1,000	2

Distribution of the families whose expense for medical care exceeded $1,000, by family income, was:

Annual Income	*Medical expense over $1,000 (percent)*
Under $2,000	1
$2,000–3,499	1
3,500–4,999	2
5,000–7,499	2
7,500 and over	5

Approaches to the Problem

Anderson discussed some possible approaches to the care of persons with long-term, costly illnesses. Among these were increasing the range of benefits in existing voluntary health insurance. At present, even the most comprehensive hospital and medical care plans do not provide home nursing service, convalescent home care, and appliances, he said. Also, with the possible exception of some major medical contracts, these plans frequently do not provide drugs.

If $10 per family could be directed into health services, through health insurance or by some other means, it would mean $500 million in new money for the care of patients with chronic illness; $20 per family would increase the amount to $1 billion, Anderson estimated.

We have a fair idea of the distribution of costs of personal health services among families of varying incomes in this country and of the proportions of these families whose

costs are above certain amounts, Anderson stated. However, he said that he had no way of knowing or estimating how much it would cost to provide the full range of services necessary to care for chronically ill persons if the funds and facilities were available to establish a full-scale program.

"Lack of experience inhibits action since financial considerations are a potent factor in trying new ventures; someone has to risk the capital," he concluded.

Federal-State Aid Program For the Needy Reviewed

In a review of Federal participation in medical care for the needy, Charles I. Schottland, commissioner of Social Security, compared the volume of need with the amount of assistance given.

Of the nearly 5 million persons now benefiting from Federal financial aid to the States under the four assistance programs, a large proportion have an extraordinary volume of medical needs as a result of disability, chronic illness, or the infirmities of old age, he pointed out.

The estimated present medical care expenditures from Federal, State, and local funds total approximately $265 million annually, or an average of about $52 a year, for each assistance recipient in the four categories, he said.

For the average population, he reported, Blue Cross and Blue Shield insurance premiums covering hospitalization and inhospital surgical and medical care would amount to at least $100. And in 1954, each man, woman, and child accounted for $63.25 worth of private medical care, excluding services paid from tax funds.

In describing the present formula for old-age assistance, aid to the blind, and aid to permanently and totally disabled persons, Schottland reminded that the maximum amount in which the Federal Government may participate is set at $55 per person a month for all needs. Within this maximum, the Federal share is four-fifths of the first $25 and one-half of the remainder, or $35 on the maximum. (The maximum in the aid to dependent children program varies with the size of the family.)

If a substantial medical cost is paid in any one month, the total of maintenance and medical care is likely to exceed $55, with the result that Federal participation in medical care is very limited, he said.

He named as another problem the complex and relatively costly bookkeeping operation in computing the Federal and State shares for each recipient.

State Programs

In discussing the State programs, Schottland reported that an analysis of the situation in 48 States, the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Virgin Islands reveals that 7 States make no payments for medical care under the four categories; 1 State provides this care through its public health department; and in the remaining 45 States the average annual expenditure per person receiving assistance is under $24 for 20 States; $24–$71.99 for 15; and $72 or more for 10 States.

Each State determines what items are necessary and how much will be paid for them, Schottland reported. Most of the States have limitations on the kind or amount of medical care provided from assistance funds. Some States make no provision for hospital or nursing home care; others provide only for hospitalization and drugs. One State provides dentures only to employable persons. In a number of States the funds allowed for dental care or for glasses or appliances that might help rehabilitate the recipient are severely limited. Still others limit the number of doctors' calls that will be paid for or the total amount allowed for medical care.

A number of proposals, he said, have been advanced from time to time to encourage and assist in the provision of adequate medical care by empowering separate matching of medical care expenditures.

Practicable Hospital Data Goal of New Audit Plan

A new medical audit method for assessing hospital services has emerged from the research work of the American College of Surgeons and the Professional Activity Study of the Southwestern Michigan Hospital Council.

Paul R. Hawley, M.D., director of the American College of Surgeons, reported that the new approach has proved effective, practicable, and inexpensive in intensive testing at 23 hospitals in 21 communities in 3 States.

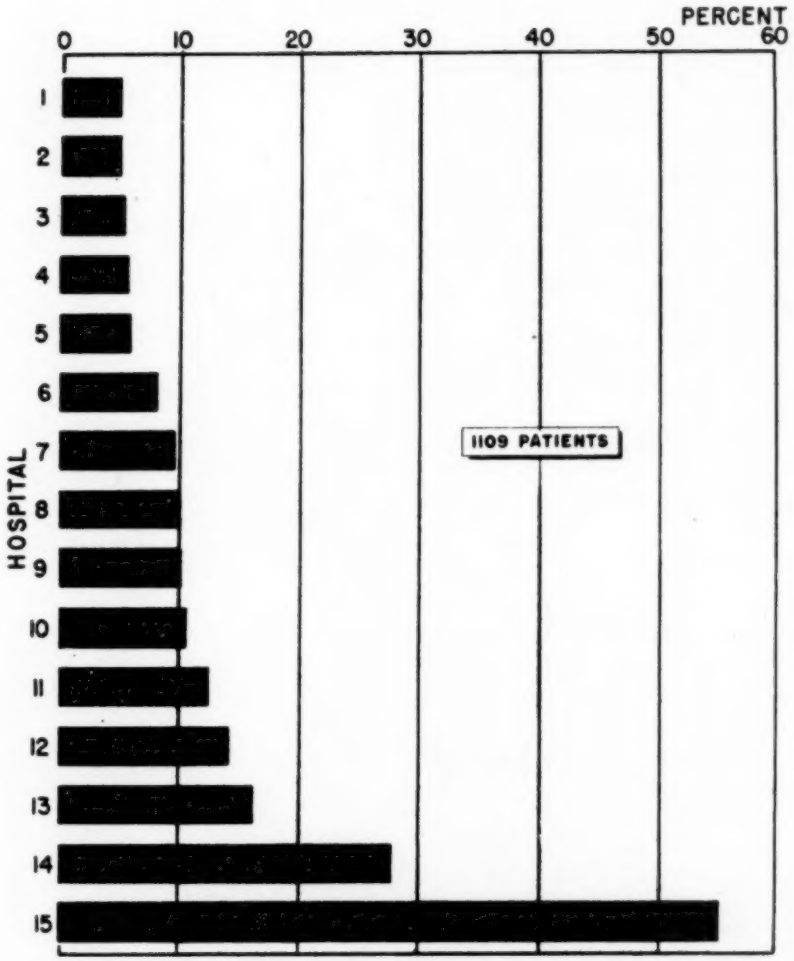
He named as deficiencies in past medical audits: use of nonvalid statistics, such as the discharge conditions of "recovered" and "improved"; surveys of limited and nonconclusive criteria, such as infections and deaths; impracticable methods of collecting, tabulating, and analyzing the data selected; and demands for excessive participation by busy practicing physicians.

In a civilization noted for its ability to enumerate the yearly production of automobiles, cans of soup, and bars of soap, we have no exact statistical information about such fundamentals as the number of appendectomies performed or the number of pneumonia patients treated in our hospitals each year, Hawley said.

The Procedure

Basic to the new system are useful data standardized to permit comparison among hospitals of like size and patient groups, machine tabulation and analysis by a regional statistical service, and hospital medical staff evaluation.

Diabetes patients without blood sugar determinations.



From the hospital's medical records on discharged patients, the record room librarian transfers to a code sheet the data selected for analysis and comparison. Entered are such facts as the patient's age and sex, patient's physician, final diagnosis, operations, and laboratory procedures. For instance, if a blood count was done, this fact is recorded on the code sheet. If a chest X-ray or urinalysis was not made, this fact is recorded. The medical room librarian has no further responsibility for indexing and statistical presentation.

The code sheets go to a regional statistical service center where the data are put on punchcards and machine tabulated. Five different kinds of lists are run off, breaking the data down by diagnosis, operation, physician, surgeon, and clinical service. The lists are returned to the individual hospitals and provide the medical record indexes necessary for accreditation.

With the data of all the participating hospitals retained on punchcards, the center can produce analytical comparisons in any specified phase.

Comparative analysis of medical care for the same disease gives the individual hospital a yardstick for measuring its practices and, if the pattern of care varies widely from the other hospitals, the opportunity to determine the reasons, Hawley said. Medical staff evaluation of selected phases of patient care, he indicated, permits an effective and timesaving spot check by physicians.

The Result

He drew several sample evaluation situations from the trial test results. One was the varying practice among 15 community hospitals of making blood sugar determinations on diabetes patients (see chart). Each of the hospitals had adequate laboratory facilities and were in an area noted for above average medical care. But in 8 of these hospitals at least 10 percent of the patients with recorded diabetes received no blood sugar determinations during their hospital stay.

The medical staffs of these hospitals, he commented, would certainly be interested in ascertaining the reasons for failure to use such a recognized, established, and authoritative test in the diagnosis and treatment of diabetes.

Hawley concluded that the presentation of statistical evidence on hospital services and experience emphasizes facts missed entirely by methods of evaluation that fail to tabulate, analyze, and compare practices.

Metropolis O. K.'s Care But Not Way It's Given

The people of "Metropolis" tend to be satisfied with what they get in the way of medical care and to accept its cost, but they dislike the impersonality with which it is given, according to Earl Lomon Koos, Ph.D., professor of social welfare, Florida State University.

That modern, technique-centered medical practice lacks the human warmth of the old-time general practitioner was the view of 64 percent of 1,000 families, he stated.

Families in which husbands were under 40 years of age were more defi-

nite in their criticism than were families in which husbands were older. This finding, Koos said, disagrees with the charge that this attitude exists only among the older age groups, who view the passing of the family doctor with nostalgia.

Only 19 percent of the families believed that medical care was too expensive, and only 17 percent expressed pronounced dissatisfaction with the care available or received.

Koos described "Metropolis" as a somewhat sophisticated city of about 350,000 population located in the industrial northeastern United States. It has a medical school, a half dozen approved hospitals, a full complement of medical specialists, a sprinkling of general practitioners, and an "above average" health department. It may not be entirely representative of cities of its size, but it is probably nearly so, Koos said.

The families interviewed were an economically stratified but randomly selected sample. Data were analyzed on the basis of the family's membership in 1 of 3 social strata.

It is futile to belabor the physicians of "Metropolis" for they are often caught in a social matrix not of their own making, Koos said. However, it should not be futile, he added, to suggest that the individual physician alter his techniques and attitudes, insofar as possible, to provide what the people feel they need and want from medical care.

Hospital Care

A somewhat similar but less specific criticism was made against hospital care, Koos indicated. Seventy-one percent of the respondents believed that the hospital care available to them was unsatisfactory, but most of them were not quite sure why. Koos said the following excerpt from one interview was characteristic of the replies of 8 out of 10 of those dissatisfied:

"I don't say our hospitals don't turn you out alive . . . but the way they treat you while you are in their hands is pitiful. . . . I can't put my finger on it exactly. I think what I'm trying to say is nobody just gave a darn about me as a person. I was just somebody filling a bed."

Koos believes this situation is the result of the hospitals' changing social structure. The replacement of the relatively simple hierarchy of doctor-nurse-orderly-kitchen maid with a structure which includes various aides, technicians, floor clerks, and so on has created confusion and frustration for the patient and his family, he said.

Eighty-two percent of the families also believed that hospital costs were too high.

It must be admitted that the hospital, like the physician, is caught in the coils of an advancing medical technology, as well as faced with problems of labor and economics, Koos noted. He believes, however, that many of the ills current in hospital-patient-family relations are present simply because the patient has been somewhat forgotten.

Public Health

The health department was viewed as a sort of health police force, Koos reported. Such functions as "keeping the water pure," "being sure that sewage is taken care of," "quarantining people who have infected [sic] diseases," "being sure that the restaurants are clean," were considered the only functions of the health department by two-thirds of the families.

There was little consciousness of the health department's value, its effectiveness, or even its real functions, he declared.

Koos suggested that one answer to why community health programs have not progressed more rapidly may be found in these data. If the population of a sophisticated urban community of better than average economic status lacks knowledge and appreciation of its health department's activities, we may well expect a similar or even greater lack in less-advantaged communities, he said.

When asked to suggest health needs not now being met that might be met through health department activities, only 2 to 3 percent gave fruitful answers.

The results of this study, according to Koos, suggest either a magnificent complacency about the health of the community, or an acute unawareness of what the term "health" really means, or an unawareness of what public health personnel have to offer. He believes that any of the three explanations gives cause to be disturbed.

Saskatchewan's Experience With Prepaid Care

In Saskatchewan, Canada, three separate patterns of prepaid medical care have evolved over the past 35 years. The strengths and weaknesses of each in meeting the problems of rural medical care and possible further developments were discussed by Milton I. Roemer, M.D., M.P.H., director of the medical and hospital services branch, Saskatchewan Department of Public Health, Regina, Canada.

The first pattern was the municipal doctor plan, according to Roemer. Although varying in detail in different municipalities, the plan is essentially this: In return for a salary, paid from local tax funds (in later years, supplemented by provincial grants), a physician provides medical services to any resident of the municipality needing them.

Developed entirely through local initiative, the municipal doctor plans are the prairie settlers' answer to the problem of attracting and holding physicians in rural communities, he stated. And to this end, he specified, they have been effective. By 1950, the peak year, there were 173 municipal plans in operation, covering at least 200,000 of the Province's 833,000 population.

These plans, however, have not been able to keep pace with changes in social and living conditions or in

the practice of medicine, Roemer maintained. The inability of an isolated general practitioner to practice the best modern medicine he considers the most serious limitation.

Neither the quality nor the quantity of services provided under the municipal doctor plans can be a cause for deep satisfaction, he said. Concerning quantity, he mentioned that in one plan the volume of services in 1951 was 1,883 per 1,000 persons. In this plan, there were 2 physicians practicing full time and 3 who were semiretired, serving 3,000 persons. He compared the figure to the 4,405 services per 1,000 persons provided in the same year under the regional medical care program in the Swift Current public health region, where there were 36 physicians for a population of about 50,000.

Voluntary Plans

Voluntary prepayment plans sponsored by the physicians themselves was the second of the patterns. Begun in 1939 in the cities of Saskatoon and Regina, where local governmental prepayment plans did not exist, they began to expand rapidly about 1950, Roemer said. In that year, the Saskatoon plan began to seek voluntary enrollments in rural communities, and by 1955, it had enrolled at least 75 percent of the population in each of 18 towns and villages and 58 rural municipalities (75 percent was the minimum to qualify for inclusion in the plan).

Membership charges are much higher than the taxes under the municipal doctor plans, but the voluntary plans have the advantage of free choice of almost any general practitioner, including those under municipal contract, and any specialist in the Province, he pointed out. Prosperity, improvement in roads, increase in the number of automobiles, and popular writing about modern medicine, he indicated, have helped to provide a favorable climate in the rural areas for the growth of the voluntary plans.

In 1955, Roemer stated, the average annual cost of the Saskatoon community plans was $18.50 per capita, with a usual family charge of $72. Also, to reduce expenditures, it has been necessary to introduce restrictions—for example, a $600 limit on services to an individual in any one year for any one illness; a $25-a-year limit on diagnostic X-ray and laboratory examinations; no care for allergic or psychiatric conditions. Another weakness, Roemer said, is the fact that 25 percent of the population is not covered and that these largely represent low-income families in special need of medical care.

Regional Plans

Another possible solution to the difficulties in providing rural medical care was recognized in 1945, when a prepaid medical care plan was organized in the Swift Current public health region, Roemer stated. All 36 physicians in the area participate in the plan, so there is a free choice of many physicians, and all 50,000 residents of the region are entitled to services. It has been possible, he reported, to provide "quite comprehensive medical services at an annual cost of about $14 per capita."

The quantity of medical services is considerably higher than under the municipal schemes, and the quality is doubtless as good as under the voluntary schemes, he maintained. Another good feature is the encouragement of preventive services.

However, Roemer does not consider the regional plan completely satisfactory. He noted, for one thing, that the people still must rely heavily on general practitioners even for relatively complex procedures. Only on a provincewide basis could the people have access to all medical skills, he said.

Roemer observed that from the use of all 3 plans it could be said that in Saskatchewan's experience with prepaid care hospital admissions are increased rather than reduced. In rural areas without prepayment plans, the admission rate was 197 per 1,000 in 1954 as compared to the 260 admissions per 1,000 persons per year in the Swift Current plan region.

"Whatever benefits may derive from early diagnosis under prepayment, the very access to a doctor evidently results in case finding and hospital therapy to an extent which causes overall increases in hospital utilization," he remarked. He estimates that, in its varied forms, prepayment now covers 45 percent of Saskatchewan's population.

Efforts to launch new regional schemes within the last year have been unsuccessful. Plebiscites on new taxes to support the plans decided against them, he reported. Roemer believes, however, that negotiations with the medical profession, which has recently come forward with a new prepayment plan, should ultimately result in a mutually agreeable regional plan.

But still other steps are necessary for improved rural medicine, Roemer declared. "The challenge is to provide a general medical practitioner close to the people, yet working in a framework which would permit him—without financial loss—to refer cases readily to a specialist's care."

To achieve this objective, Roemer suggested that rural general practitioners might be attached to medical groups, with a group clinic located in a large town. The village physicians could refer difficult cases to the clinic, and major surgery could be done in district hospitals, he said. The village physicians would share in the income earned by the group as a whole.

Saskatchewan Shares Prepaid Plan Data

How statistical data derived from prepaid hospital and medical care programs are used for knitting Saskatchewan's health services into a comprehensive and balanced unit was described by Murray S. Acker, M.D., D.P.H., and L. G. Williams, M.A., of the Saskatchewan Department of Public Health, Regina, Canada.

Public health and medical or hospital care agencies are continually

designing records and collecting data, and often no one seems to know how all of this interesting information can be put to use, they said. All the data may not be relevant to the immediate tasks of an agency. But many times they could be of inestimable practical value to another agency operating in a different sphere of health activity if there were some mechanism for sharing the information, they explained.

Saskatchewan, they acknowledged, has the mechanism and a more than customary motivation for achieving coordination of services. Although diverse in coverage, benefits, and maturation, the existing provincial, regional, and local programs are predominantly tax-supported and publicly controlled, and they are directly or indirectly supervised by the provincial health department.

In their advance along parallel fronts toward a universal, comprehensive service, coordination is mandatory to avoid serious contradictions and inequities, they said.

Contributing data with the widest application, they reported, are the provincewide hospital care insurance plan with eligibility for benefits contingent upon prepayment of a tax premium; the Swift Current regionwide prepaid medical care program covering every resident with a wide range of benefits on a tax-supported basis; and the provincewide public assistance program providing a virtually complete range of health benefits to the indigent and near indigent.

These data are timely and reasonably accurate, they said. Moreover they are referable to the total population in the Province, or in a geographic region, or within a specific socioeconomic group.

Acker and Williams pointed out that within Saskatchewan's organizational framework any parallel agency, inside or outside the health department, has ready access to the statistical data of the operating prepayment programs, and thus the data are of potential value beyond their requirement for the immediate administrative functions of the prepayment agency.

Initial steps have been taken to use the data for planning specific public health projects, they said. Decisions requiring the extension of medical care benefits have been guided by precise measures of morbidity.

Analyses of hospital care data have been valuable in formulating indexes of bed need in specific areas and in stimulating higher standards of care. The data have supplied material for epidemiological studies and for public and professional education.

In Health Project

Illustrating the use of prepayment plan data in deciding policy and planning a public health project was an account of the organization of a regional program for rheumatic fever prophylaxis.

Hospital caseload and cost data demonstrated that a successful preventive program, using daily oral penicillin at an average annual cost of less than $40 per capita, would in time realize substantial savings in hospital care costs in a public program. The 852 hospital discharges for rheumatic fever and the 385 discharges for chronic rheumatic heart disease in the typical year of 1952 accounted for 25,585 patient-days of hospital care at a cost of almost $210,000. Medical care costs added a further estimated $52,000.

After the program started, the hospital records solved the problem of case finding in the region. Lists of the 106 regional patients hospitalized with rheumatic fever over a 5-year period, plus relevant data such as age, residence, attending physician, and hospital, gave the officer immediate information on the majority of potential candidates for prophylaxis.

Another example illustrated how universal insurance plan data can fill in the gaps and delays inherent in compulsory reporting of notifiable diseases. The Swift Current medical care plan yielded early information on primary cases of infectious hepatitis during an upswing of incidence in the region. The knowledge, gained from the daily medical account forms of the practicing physicians, facilitated the widespread administration of gamma globulin in the prevention of secondary cases.

Use Pattern

In the hospital program itself, the operations data have proved valuable adjuncts in studying such factors as variations in the patterns of use, they reported.

They gave as one example the higher rate of use in rural than in urban areas revealed by the service statistics. Characteristics of the areas of highest use, a study found, were greater rurality, low population density, larger families, lower land values, and greater distances from large cities.

Inadequate resources for home care and a smaller supply of physicians, it was concluded, figured in the high use rate.

In the rural "high" areas patients with influenza, pneumonia, and bronchitis were admitted 4 to 6 times as frequently as similar patients in the urban low areas of use. Though admitted less frequently, the urban patients with respiratory illnesses had longer periods of stay. In other words, they said, less seriously ill cases in the larger urban centers were much more likely to be cared for at home.

By these analyses, they said, high utilization is more intelligently understood as a combined product of social, geographic, and professional conditions than the result of personal whim on the part of the patient and his doctor.

Indigent Medical Care Plan Operated by Physicians

The key to the success of the Topeka plan for providing medical care for the indigent is its operation by local members of the medical profession, in the opinion of Glen C. James, director, Shawnee County (Kansas) Social Welfare Department.

Now in its 13th year, the plan has received nationwide attention and the "seal of approval" of the American Medical Association, James stated. He outlined the plan's main features as follows:

By monthly contract, the public welfare board employs the county medical society to obtain complete medical services, hospital care, and drugs for patients referred from the county's public welfare rolls. The board agrees to pay the society a lump sum, based on a fixed amount for each person sharing in the benefits of a public assistance grant. (Until July 1955, the payment was on a family unit basis.) As an agent of the welfare board, the society then asks all its member physicians, 102 in number, to give professional services to referred welfare recipients.

The plan is primarily clinical in nature, with 17 well-equipped clinics staffed by physicians of the society on a rotation basis. However, both day and night house calls are made, and diagnosis and treatment may be given in a physician's office at the physician's request. Hospital care is authorized by the attending physician and paid for by the society. Prescribed drugs are dispensed at the medical society drug store during the day, or, if dispensed elsewhere after clinic hours, they are paid for by the society.

The physicians are paid by the society on a unit of work basis, according to a set schedule: An office or clinic visit is 1 unit; a day home visit, 3 units; a night call, 5 units; an obstetrical case, 20 units; and major surgery, 35 units. The cash value of the unit varies, since the funds remaining each month after all outstanding bills have been paid are prorated among the physicians on the basis of the number of units of work done.

The welfare clinics are staffed with nurses and clerical personnel employed by the local public health department, which is located in the same building. The clinics and the health department also use the same laboratories.

A Minimum of Problems

Problems in connection with this medical care program are held to a minimum, according to the welfare director, by the extensive use of committees that hear complaints and work out necessary changes: a committee on hospitalization, a consultation committee, a clinic committee, a drug committee, a complaint committee, and a finance committee.

Among the problems he mentioned is "the often legitimate gripe of the physicians that persons demand excessive services just because there is no extra charge for extra services." Another is the fear on the part of the patients that public medical care will be inferior to private medical care.

To help make the plan function smoothly, there are a few restrictions, James said. For example, the attending physician may not hospitalize a patient for longer than 2 weeks without the consent of the hospitalization committee; new drugs cannot be used until the drug committee adds them to the available list.

Recently, the medical society and the welfare board agreed to permit the physicians to charge patients $1 for each house or office call, the charges limited to two a month, James reported. The practice was abandoned after 3 months' trial on the suggestion of the physicians, who found that it was "both unpopular and unprofitable."

Samples Union Opinion Of Group Care Plan

A study on how the patient-members felt about the Labor Health Institute of St. Louis, Mo., a prepaid union group medical and dental plan, was reported by Nathan Simon, M.D., and Sanford Rabushka, M.D., interns at Jewish Hospital in St. Louis.

The institute is one of the oldest and most successful comprehensive, prepayment group practice plans, they said. Founded in 1945 by what is now the Warehouse and Distribution Workers' Union, AFL, the institute provides comprehensive medical and dental care to 15,000 union members and their families, a low-income group of semiskilled and unskilled warehouse workers, they reported.

The institute's complete dental program makes it unique among plans of its type in the United States, they declared.

Financing is by employer contributions of 5 percent of the gross payroll in most of the firms covered and provides protection for the union member, spouse, and all children under 18, they reported. In a few shops the employer's contribution is 3½ percent of gross payroll and covers only the union member, they added.

Findings

On the basis of a sample of 199 of 15,000 members they found that:

Sixty-five percent expressed unqualified approval, 21 percent were satisfied but had some criticism, 7 percent had no opinion, and 7 percent expressed marked dislike of the plan.

The dislike was correlated with dissatisfaction with the patient-doctor relationship. It appeared that people who disliked the plan entered it with preconceived ideas which precluded their acceptance of the plan.

Members who used the institute found the quality of professional care satisfactory and were able to establish stable doctor-patient relationships the same as before joining the plan.

The institute provided about 80 percent of the total professional services of the sample for the year studied. The most frequent reason for using outside services was a strong attachment to a physician or dentist not on the staff of the institute.

Service Statistics . . .

Sound Service Statistics Measure Achievement

Sound service statistics are essential in maintaining or redesigning the original plan of the public health program as it progresses, stated Evelyn Flook, chief, Public Health Practice Studies, Division of General Health Services, Public Health Service.

The Working Group on Service Statistics of the Public Health Conference on Records and Statistics, the National Conference on Evaluation in Public Health, and the Committee on School Health Service Statistics of the American Public Health Association are promoting the concept of sound service statistics for program management. The working group has defined service statistics as meaningful numerical measurements of services rendered to individuals and to the community through public health programs.

Statistics which focus attention on numbers and kinds of persons served, types and amount of service rendered, and what happened as a result of the service are not to be confused with traditional activity counts, Flook said. True measurements of accomplishment cannot be arrived at by counting units of service alone, she said.

Sound service statistics can provide perspective for judging success or failure in achieving stated objectives or in making progress toward them, she continued, adding that service statistics can serve as the gauge for distributing or redistributing resources and for determining whether and when program operations should be realigned.

Useful Data

Flook said that the factor of interrelatedness was more important than any other in the development of sound service statistics. Case records of individuals served by the health department are an excellent source of data, she noted. She continued:

"The units of measurement which apply to service rendered must be related to such baseline data as population, by age groups; morbidity, natality, and mortality; the health needs of special groups—not as seen by the public health worker alone but as also seen by the people; health facilities, services, and personnel available under public, voluntary, and private auspices; housing, sanitation, nutritional and general economic status of the community; and information reflecting expenditures."

In addition to being related to baseline data in establishing quantitative relationships between the service rendered and the health problems involved, service statistics, to be most useful, should:

- Be designed to serve a specific purpose, such as help define a health problem, help measure extent of service, help measure progress in relation to the problem, help furnish a basis for future planning.
- Be developed in accordance with clearly defined program objectives.
- Reflect service to people—not merely enumerate volume of activity of the health department staff.
- Be sufficiently limited in scope and volume to justify the time, effort, and expense involved in production.

Preparation of recurrent statistical reports can be simplified by making special limited studies in place of routine collection of complex mass data, Flook added. Short-term studies, often based on a sample of the total and aimed at answering specific questions, are economical. Frequently, they pinpoint the particular problem at issue, she said. Well-controlled epidemiological studies, with appropriate appraisal of differences in effect, are classic examples of the use of service statistics which show the population affected and that unaffected by a particular problem, she remarked.

Flook then outlined how useful statistics might shape up for evaluation of programs. For a single segment of a school health program, they might include:

- The school population covered.
- Number of children examined.
- Number of children not examined who should have been.
- Number of children with health needs.
- Number of defects or abnormalities for which further attention is indicated.
- Correlation of the abnormalities found with those corrected.

Planning and Management . . .

Administrative Management Concept Is Supported

If health officers availed themselves of modern administrative practices, they could devote more time to medical matters and less to administrative duties, stated Murray L. Nathan, LL.B., director, office of planning and procedures, and Herman E. Hilleboe, M.D., M.P.H., commissioner of health, New York State Department of Health, Albany.

Personnel and fiscal management have developed into specialties for which professional public health officers have not been trained, they said.

Nathan and Hilleboe defined administrative management as overall administration rather than any specific phase of management or administration. Its goal in public health, they said, is to create an environment in which many persons from different disciplines may aid health officers to reach a common objective.

"Administrative management is not a catchall for miscellaneous clerical duties but is an activity involving high skills in management and operations control," they stated. "To handle skillfully a complex administrative problem is as significant to the progress of public health as a well-executed epidemiological investigation of an outbreak of disease."

Approach to Problems

One of the features of administrative management is its systematic and analytical approach to problems, Nathan and Hilleboe continued. Public health activities and objectives must be analyzed and evaluated to determine how well they meet the needs for which they were established and whether each activity is an appropriate responsibility of government or of private groups or individuals, they stated. Health workers must define priorities among their activities, point out special areas for needed research, suggest, develop, and test new programs, recommend for adoption only those which have had successful tests on selected populations, and be alert to the appropriateness of a particular activity as a government responsibility, they said.

In health department organizations, such nonmedical titles as "deputy commissioner, administrative services," "personnel administrator," and "director of planning and procedures," indicate that, with the delegation of important administrative duties to persons especially trained and experienced, "administrative management has come of age," they pointed out.

Training Personnel

When the concept of administrative management has been accepted by the health department, the health officer has the practical problem of acquiring trained personnel, Nathan and Hilleboe said.

Some schools of public health now offer courses in nonmedical administration leading to a master's or a bachelor's degree in public health. A school of public health is an ideal place to train these people, they said, and joint training of medical and nonmedical public health personnel should lead to joint working arrangements in the field.

In conclusion Nathan and Hilleboe stated that a continuing program of education, training, and research must be carried on in health departments to keep personnel currently informed of changes in administrative management and public health, to develop new techniques, and to put these techniques into practice quickly. Also, administrative management personnel themselves must take advantage of every academic aid offered.

Philadelphia Simplifies Sanitation Records

A new system for recording sanitation inspections, using a single record form, is employed in Philadelphia's milk and food sanitation program.

Morris Shiffman, D.V.M., chief, milk and food section, and Paul W. Purdom, director, division of air pollution control and environmental sanitation, Philadelphia Department of Public Health, reported that the system was field tested for a year and proved to be successful in operations research.

The new record system fits in with the new inspection system which was adopted several years ago when the Philadelphia Department of Public Health reorganized the division of air pollution control and environmental sanitation and changed from a specialized to a generalized type of inspection, Shiffman and Purdom stated. Under the new system, the sanitarian is responsible for all types of inspection of milk and food establishments as well as for other phases of the environmental sanitation program.

They said that the concept of sanitation unit operations and processes opens up new opportunities for the simplification of sanitation record forms. Multiple forms may be replaced by basic single forms to include any group of related environmental sanitation activities.

Single Record Forms

All data are now recorded on a single sanitation form and are processed by the IBM punchcard method, Shiffman and Purdom stated. The single form serves three purposes: It provides the inspected establishment with a positive, clear indication of what is required to meet standards and improve operations; it gives the administrator the information that will aid him in program planning and evaluation; and it provides legal records.

The single record form does away with the need for a separate form for each type of milk and food establishment, Shiffman and Purdom said. In addition to the general heading, there are two separate information areas on the form. One consists of ruled lines and columns where the sanitarian lists his recommendations to the establishment; the other is a check sheet intended solely for departmental information and data for the IBM punchcard records.

The sanitation items included in the check sheet are selected to cover those basic operations and processes which are essentially common to food and milk establishments and which give useful information for analysis, they said. The methodology for the choice of items is analagous to the concept of unit operations and unit processes in chemical engineering and food technology. Extraneous detail has been avoided so that the analytical system does not bog down from the sheer weight of detail.

Uses of Data

Some of the data currently derived from the record system include an enumeration of specified sanitation defects found on inspections and information as to whether these defects have or have not been corrected, Shiffman and Purdom said. In this way, the degree of compliance with any recommendation can be measured. Provision is made for analysis of survey items and for field research projects.

In conclusion, they stated that the completed analyses permit a measure of the effectiveness of personnel and an evaluation of the methods and activities of the organization. The problem areas may be pinpointed and success or failure in correcting any sanitary defect may be measured.

Executive Must Clarify Management Role

A definition for "management personnel development" is to "get people to do more than they themselves think they can do," according to Virgil K. Rowland, personnel assistant to the vice president and secretary, Detroit Edison Co., Detroit, Mich.

Managers frequently do not know what is expected of them or what they should expect of subordinate management personnel because the department head has not discussed with them the responsibilities of the job or the standards of job performance, Rowland stated.

Job descriptions, performance standards, and individual evaluation of job performance provide a basis for improving managerial performance, he said.

Job Descriptions

A job description should be more than a list of the manager's specific duties; it should include a statement that management functions include the broader phases of management, such as responsibility for planning, controlling and executing; being a leader of subordinates; and directing the work of others.

Rowland said that too often job descriptions are merely statements that the job of subordinates, including managers, is to get the work out. The manager's responsibility is to direct others, not to get the work out himself, he emphasized. Companies which define a manager's job with a description of the duties and responsibilities of subordinate managers are in the minority, he added.

Performance Standards

Department heads are apt to feel that managers should know what their responsibilities are and how to carry them out. "We feel that we are insulting their intelligence if we try to tell them how to be good managers," Rowland stated, but it is the responsibility of the executive and not the personnel director, the industrial relations man, or a staff member, to talk with the manager about his job and the standards of performance he is expected to meet.

Rowland cited the experience of the president of a company with his sales manager. The man was an excellent salesman and the company's sales were the envy of its competitors. The sales manager had been helpful to the president in many ways and had set high quotas for sales. But, said the president, "I still had the feeling that my general sales manager was not part of my team."

Discussion disclosed that throughout a close association of 12 years each had suspected that the other was unhappy in the relationship, and that the sales manager was about to go to another company. Furthermore, the president found that the sales manager did not know what his job was. "I couldn't censure him for that," the president said, "because I realized that I hadn't discussed it with him."

Together, they determined the major segments of the sales manager's job and a satisfactory level of performance, as well as his responsibility for planning for future growth. A few days later, the manager called a meeting of his regional sales managers, and a week later they met and set standards for their own jobs. That, said Rowland, "is management personnel development in action."

Evaluation of Job Performance

To be helpful to employees and effectively to evaluate their job performance, management personnel must discuss with each individual the evaluation of his job. This is where management often fails, Rowland said. "We do everything but talk to the individual about his evaluation. And the reason we don't do it is because our boss, the next man above us, has not insisted that we do it. We do what the boss inspects, not what he expects," Rowland pointed out.

"The boss must know in what areas his employee is doing a good job and in what areas he needs to improve. . . . Individual evaluation of managerial performance is becoming an accepted philosophy in many companies today," and it is "a responsibility that cannot be delegated," he emphasized.

In conclusion, Rowland stated that any one of three techniques—statement of responsibility and authority, determination of performance, and evaluation and discussion of his performance with each employee—will improve managerial performance. When all three techniques are used and interrelated, the results are compounded and the improvement begins to be apparent in the profit and loss statement. Companies using these techniques can pay their employees more and can reduce their production costs, he said.

Michigan Broadens Use Of Marginal Punchcard

An adaptation of the marginal punchcard system of recording environmental health activities and

programs has extended the use of this method and has made possible a more thorough and intensive administrative review of departmental functions, according to Vinson R. Oviatt, B.S.C.E., M.P.H., engineering consultant, hospital unit, Michigan Department of Health, Lansing.

Almost all record systems record historical facts, Oviatt stated, but assembling information requested by other agencies usually is expensive to the health department in terms of personnel time. Furthermore, he said, few record systems provide information needed to plan workloads within units and departments, to justify budget request expenditures, and to plan programs, or provide bases of communication to the public, to superiors, or between sections or divisions of a working unit.

After studying the relative merits of mechanical and punchcard systems, three Michigan public health workers selected the marginal punchcard system as the simpler and more economical. The only equipment needed is a hand punch for notching the cards, an alinement block, and a sorting needle, Oviatt said, although offices having a large number of cards to count and sort may purchase other equipment which will speed up summarization of the data.

The system has a number of advantages for reporting and recording sanitation activities and services, Oviatt stated. These are: rapid collection of information; summarization of records and data without transcription; only one form necessary; variation in use with the same basic forms; economy in cost of equipment and forms and in personnel time; relatively accurate and extensive use of quantitative data; compatibility of information among health departments; and logical balance between field and departmental use of records.

Punchcards and Forms

The marginal punchcard and the inspection form are essentially identical, with two exceptions, Oviatt said. The coding information on the card does not appear on the inspection form, and a condensed check list of sanitation items usually inspected at all types of establishments has been added to the bottom of the punchcard. At the end of the check list, several items have been left blank for the use of individual sanitarians in recording selected data. Several unallocated code sections have also been left for coding special studies or data.

Space has been left on the inspection sheet for the sanitarian's remarks to the operator of the establishment and, at the bottom of the sheet, for signatures of the inspector and the operator.

Michigan uses a multiple-purpose form, Oviatt said, that can be used not only for reporting sanitary inspections of all types of establishments—food, milk plants and producer farms, slaughterhouses, and sewage treatment plants—but for coding data on all other programs of the health department and for recording complaints. The heading of the form has space for the date, names of establishment and operator, address, establishment number, license number, location, and type of establishment, and for the name, address, and telephone number of the complainant. Individual check lists for the different types of establishments are carried in the sanitarian's notebook.

Coding and Filing

The American Public Health Association code for reporting sanitation activities and programs is the only code specified for general use with the marginal punchcard system, Oviatt stated, and in Michigan, this master code has been expanded to fit sanitation practices in that State.

Each health unit records the data in the same way, although each one must work out its own code for geographic location and identifying numbers of sanitarian and establishment.

Each sanitarian notches the punchcard when he fills out the inspection form. This not only saves office time but insures accuracy in coding because if coding is done by clerical personnel, some misinterpretations of the sanitarian's findings are bound to occur, Oviatt emphasized.

Cards may be filed by program, by sanitarian, by area, or by any other method that fits the needs of the health department, he said, and they may be summarized as often as necessary. Most health departments summarize data monthly.

Other Uses

Punchcards have been useful in recording office activities, such as time spent on a special program or on program planning, itemizing correspondence, or recording information, conferences, and staff meetings, Oviatt stated.

In Michigan, monthly reports of programs, by activities, enable the State health department to evaluate health programs with a minimum of effort. Among the various uses made by individual health units of the data obtained by the marginal punchcard method are reporting of services to political subdivisions, providing summaries of activities to controlling governmental bodies, time and cost analyses, comparison of services to different areas, analysis of work of individual sanitarians, and evaluating and planning of programs.

The system can be used to evaluate programs, establishments, or geographic areas over a period of time by comparisons of types and numbers of activities, number of deficient items, and approval status. However, sanitarians and statisticians in Michigan are exploring other adaptations of this method in measuring the quality of an activity or program, Oviatt stated.

In conclusion, he reported that the success of field trials of the marginal punchcard system has resulted in its continuation in the trial areas and in its adoption of health units outside these areas.

Cooperation of Agencies Still a Major Goal

Cooperation between health and welfare agencies can be achieved; it can produce improvement in services to people; but it is still not often practiced.

This evaluation was the conclusion of Jonas N. Muller, M.D., M.P.H., staff director of the Sub-Committee on Medical Care, American Public Health Association, and Pearl Bierman, M.A., medical care consultant, American Public Welfare Association. It is based on visits with State and local health and welfare department personnel in eight States and current reports in the literature.

Many different forms and degrees of cooperation are found, they specified. However, most cooperative efforts are somewhat remote from the recipients of services, and few are vigorously directed at health goals. Cooperation is rarely explicitly defined in policy terms, they added.

Not noncooperation, they explained, but simply no relationship at all on the administrative level, is the usual situation. Many health officers, however, informed Muller and Bierman that they avoided making any special provisions for health services to the indigent for fear the health department might be labeled as an agency for this group.

Areas of Cooperation

The major area of well-defined cooperative effort among State agencies centers around boarding homes and such institutions. They are particularly cooperative on licensing programs, Muller and Bierman noted. Such efforts range from contractual agreements for the participation of several agencies to informal but regular visits by field personnel of the licensing agency to other agencies. In California, for example, a tripartite agreement concerning standards and licensure responsibilities for sheltered care facilities for older people provides for consultation services from the State departments of public health, social welfare, and mental hygiene.

For the most part, they stated, the cooperative efforts in this area are effective. But their potential for improvement of institutional services has barely been tested. Nor have they been sufficient to bring about consideration of other areas of mutual concern.

Muller and Bierman pointed to the lack of application of preventive services through joint effort as the most glaring gap. One welfare agency head even suggested that any notification to welfare clients of the availability of preventive services would constitute coercion and that it was therefore not an appropriate activity, they specified.

In the field of chronic diseases and adult rehabilitation, the situation seems to be little better, although possible pointers to future patterns exist in a few States. In cancer control, for example, State welfare departments have some responsibility in at least eight States.

At the local level, the greatest evidence of cooperation is in the area of direct services, according to Muller and Bierman. Usually, the cooperation is among the workers, not the agencies, and is informal and unplanned.

Five Basic Goals

If the preventive approach to health and welfare problems is to be followed effectively and economically, cooperation between health and welfare agencies must be greatly increased, they declared. They said that the following basic goals are still to be achieved:

1. The application of the normal program of the health department to the welfare population through active cooperation with welfare agencies.

2. The development of appropriate health promotion and disease prevention activities in the welfare program itself.

3. Recognition of the opportunities for improved health and welfare services inherent in areas of overlapping responsibilities, such as the licensing of institutions, rehabilitation, and certain aspects of tuberculosis control.

4. An increased awareness of the social and economic needs of persons coming to the attention of the health department and a clear understanding of the responsibilities and the potential activities of the welfare agency in support of people with such needs; and an understanding of health needs and of the resources of the health department by the welfare department.

5. The development of the necessary policy and procedures to achieve economical and efficient services, without duplication, when several agencies are concerned.

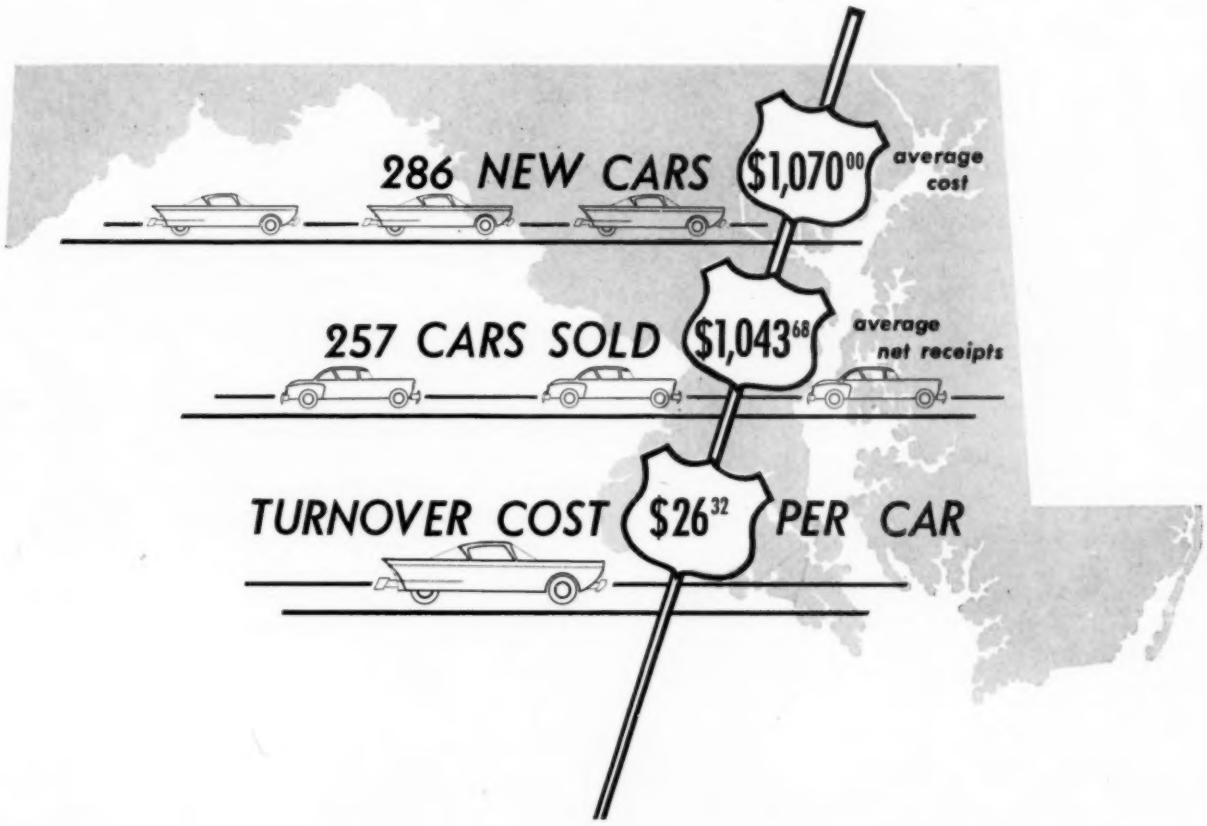
Annual Fleet Purchase Pays in Maryland

Mileage costs for transporting Maryland State Health Department personnel have been reduced to 3.1 cents per mile—a saving of 3 cents per mile over former years—by the use of an annual fleet turnover plan.

Clemens W. Gaines, B.S., chief of the department's bureau of management, described the plan and discussed how the reductions in costs came about.

Formerly, Maryland bought 285 automobiles, 230 of which were assigned to rural areas. These cars serving 680 employees were driven an average of 9,500 miles annually and were replaced in 6 years or at 60,000 miles, whichever came first. The fleet was managed and serviced by an 8-man staff in a central garage.

Under the present plan, new cars are purchased on a bid basis at prices reflecting wholesale rates. They are resold at the end of the year to highest bidders, usually at prices reflecting the one-third depreciation from retail list prices. Thus, Gaines explained, the State has the opportunity to purchase a new car with little more than the proceeds realized from the sale of an old one.



The figures for 1955 show that the department was able to acquire its new cars at a cost of about $26.32 per car, a figure which includes $12.70 for the administrative costs incurred in selling the old.

For the same year, the itemized mileage costs in cents were as shown in the table below.

Gaines pointed to the following features in the plan which have resulted in reductions in overhead and operating costs.

• Only regular grades of gas and the cheapest separately packaged and sealed oil are purchased under 6-month contracts with local service stations.

• Garaging of cars has been eliminated.

• There is no depreciation from injury to the finish, caused by removal of State or official seals from the door; instead, cars use a metal tag reading "Official Use—State of Maryland."

• The purchase of seat covers has been discontinued.

• Instead of buying black cars and the cheapest model of one manufacturer, the State buys from the manufacturer submitting the lowest price for cars which have good resale values.

• Since the cars are new, there are few repairs; thus, the central garage is scheduled to be vacated this year, and only one person will be retained to manage assignment and repairs.

• It is planned to assess nominal charges on personnel using the cars for commuting purposes.

Since about 165,000 used cars are sold each year in Maryland, the size of the deal, 286 cars, does not seriously affect the used car market, Gaines said.

The plan, which saved $85,000 out of $153,000 in 1955, makes it possible to use more of the tax dollar for di-

Mileage costs, in cents, Maryland

	Before	*After*	*Difference*
Operating expenses (gas, oil, maintenance and repair supplies, and liability insurance coverage).	3. 6	2. 3	1. 3
Overhead expenses (administrative, renting garage, salaries of maintenance people).	1. 2	. 8	. 4
Depreciation	1. 3	(1)	1. 3
Total	6. 1	3. 1	3. 0

[1] Included in overhead expenses.

rect health services by clinicians, nurses, statisticians, and others, he concluded.

Profile of Health Worker Drawn From Yale Project

The average public health worker enters the field of public health after 7 years' experience in other fields. His entry into public health is most often the result of chance, personal contacts, or the inherent attraction of the work. In addition to his other experience, the average worker has had 10 years' experience in public health.

This picture of the public health worker is based on findings of the Yale Public Health Personnel Research Project, which were reported in summary form by Edward M. Cohart, M.D., deputy director of health, New York City, and Ira V. Hiscock, Sc.D., chairman of the department of public health, Yale University School of Medicine. (Several detailed reports of the study have been published in this journal.)

Through interviews, observation, and time studies, the Yale project obtained information on education, work experience, satisfactions and dissatisfactions, and activities of public health workers. A total of 1,129 personnel in selected State and local health departments in 4 States were studied, although not all were included in each phase of the project, according to the Cohart and Hiscock report.

Their summary, they noted, provides "good approximations of the facts, rather than scientifically exact descriptions," because of State-local differences and the way in which the sample of health departments was selected. Other findings, as reported in their summary, are given below.

Sixty percent of the public health workers possess bachelor degrees. About 27 percent hold graduate degrees, but only a minority of these have degrees in public health. Education in the natural sciences is the rule; education in the social sciences is uncommon.

Most public health workers are happy to be in public health, but 1 in 7 feels that he would like to work elsewhere. More specifically, unsatisfactory conditions of work and low salaries are the most frequent reasons for discontent. Relations with fellow workers are the greatest source of satisfaction.

Distribution of Working Time

Distributions of working time to public health programs and to specific functional categories of activity were each studied in one State, Cohart and Hiscock stated. On these phases of the Yale project, they reported the following:

In local health departments, between 33 and 50 percent of all working time is devoted to maternal and child health; 25 percent to environmental sanitation; approximately 10 percent, respectively, to communicable disease, tuberculosis, and venereal disease; and about 4 or 5 percent, to chronic disease, mental health, industrial hygiene, and civil defense, combined. There is some overlapping of these divisions.

In the State health department, venereal disease receives major emphasis, closely followed by maternal and child health. Orthodox sanitation programs account for 10 to 15 percent of the time, but another 20 percent is devoted to industrial hygiene. Tuberculosis and communicable disease each takes about 10 percent of the time. And the remaining 10 percent is devoted to chronic diseases, mental health, and civil defense.

About one-third of the time of health department personnel is devoted to giving direct services; one-third, to administration and community activities; and one-third, to supporting activities.

Cohart and Hiscock felt that the findings of the Yale project "should serve as useful preliminary observations," even though future studies on a broader base may alter the percentages. "The findings are to be looked upon not merely as a description of existing conditions, but, even more, as the necessary information for an assessment and evaluation of current public health practices, especially in relation to factors of administration and personnel," they said.

Record and Evaluate In One Technique

New Jersey has a carefully designed technique for recording and adopting public health programs which its proponents maintain can minimize subsequent difficulties in program operations and simultaneously serve as a potent factor in achieving critical evaluation.

The new technique was described by Daniel Bergsma, M.D., M.P.H., and Lawrence M. Friedrich, M.C.E., M.S.P.H.E., commissioner and assistant to the commissioner, respectively, New Jersey State Department of Health.

The method of recording is not an end in itself, they stated, but an orderly administrative process to record and evaluate a plan of procedure for each specific, stated goal designed to prevent disease or to enhance the health of the community.

When clearly stated, they declared, adopted objectives constitute a summary of the need or problem, a reflection of background philosophy, a declaration of intent, and the indicated policy. The adopted activities indicate scope; may further clarify needs; usually imply personnel, time, space, coordination, and integration; and always imply procedure and policy.

Four Basic Parts

They explained that plans recorded by this technique contain four essential parts:

Part I contains a statement of specific public health needs. This expresses the lack of anything requisite, or the presence of anything harmful, to optimal health, plus the concise enumeration of related problems. Pertinent statistical data are

included. The purposes of part I are to justify the proposed plan, to define the situation, and to provide a baseline for measuring progress.

Part II states the objectives of the particular program, the specific activities for each objective, designates responsibility for each activity, and provides the first broad guidelines on cost.

Part III consists of general guidance for the program and explicit detailed procedures for each activity. The third part is designed to provide all factual and procedural data necessary for an employee with minimum training to conduct each of his activities correctly and is intended to leave only carelessness or poor judgment as reasons for failure to act correctly.

Part IV contains the predetermined yardstick or indexes to measure progress in terms of the program as a unit or of the objectives. This consists of a series of built-in evaluation indexes which emphasize accomplishment and quality.

Three facts stimulate optimal performance and critical self-appraisal of any program writer when the method is used, they commented. Every item of every program has its assigned place on the prescribed format and can readily be cross-checked by a reviewer. Colleagues and superiors of a program chief will constructively, but critically, review his program and determine by group judgment whether or not it is consistent, adequate, and practical; everyone involved is free to, and is urged to, send suggestions for improvements to the department head.

Most programs were rewritten at least once or twice, and some three or more times before unanimous or majority adoption, they said. This provided a significant training period for the personnel recording a program, strengthened the realism and logic of the approach, increased efficiency of performance, imparted a sense of accomplishment, improved morale, and heightened appreciation of departmental problems and goals.

Professional Education, Training . . .

Agencies Can Aid Schools In Preparing Careers

Health officers must aid the faculties of schools of public health in preparing personnel for health agencies by indicating what they expect the graduates to obtain during the period of instruction, stated Henry F. Vaughan, Dr.P.H., and Vlado A. Getting, M.D., who presented the schools' views on how the teaching of public health can be improved.

Drs. Vaughan and Getting are, respectively, dean and professor of public health practice, University of Michigan School of Public Health.

As personnel, duties, and responsibilities in health agencies change, so courses of instruction must be altered to meet these needs, they said. Whenever possible, the schools should anticipate the future needs of health agencies and prepare students for future duties and responsibilities.

At present, they said, because of the general evolution taking place in the character and nature of health services, the schools must prepare students for any eventuality, be it medical care administration or home care of the chronically ill. Until the health officers can give more definition to the future horizons of health programs, the schools would be derelict in their duty should they restrict their teaching program to a narrow approach to health matters, they added.

The selection of students is another responsibility that the health agencies share with the schools of public health, according to Vaughan and Getting. Basic to securing good personnel is, of course, the recruitment of people of integrity, intelligence, morality, and maturity. In addition, if the teaching of public health is to be improved, the students must be leaders in their chosen disciplines, that is, in medicine, nursing, health education, engineering, or nutrition, for example.

Vaughan and Getting also felt that ideally every student should have some public health experience prior to matriculation. This experience should be planned; it should be obtained under supervision; it should be as broad as possible; and it should lead to increasing responsibilities, they specified.

One way of assuring the schools of qualified students, they said, is through careful selection of candidates for fellowships by the agencies that have fellowship programs. Unfortunately, there are not enough fellowships available, they added, urging that all State and large local health agencies, both official and voluntary, plan specific training programs, including intramural postgraduate education.

Theory Into Practice

"Every course of instruction in a school of public health leading to a graduate degree should be so designed that the recipient will be prepared for the practical application of the theory and dogma which he has encountered during the school year," Vaughan and Getting emphasized. By this, they said they meant that opportunities to relate academic instruction to field practice must be provided as the program of instruction progresses, not before nor after the course of instruction. Too frequently, they pointed out, academic exercises are drawn from the files on situations of yesteryears rather than from situations existing today. They recommended a blending of history and everyday problems in the course of instruction.

Along the same line, they mentioned the necessity for the faculty's keeping up to date on public health practice. Keeping "one foot in the field through active association with progressive health agencies" is an advantage for the teacher that cannot be overemphasized, they said.

Also of paramount importance is the selection of the faculty, Vaughan and Getting noted. They described the ideal faculty member as "a professional person with a wide variety of experiences." Rarely should a person be selected who has not had continuing experience in the practice of public health, preferably in a local health department as well as in a State agency, they said.

Health Department's View Of Teaching Public Health

Seven questions related to the problem of improving the teaching of public health were raised by Franklyn B. Amos, M.D., and Herman E. Hilleboe, M.D., director of the office of professional training and commissioner of health, respectively, of the New York State Department of Health, Albany.

The gist of their comments on each question reflecting the health department viewpoint follows:

Objectives of the graduate school of public health. An analysis of the backgrounds of medical M.P.H. candidates in all graduate schools in 1951–52, as reported by the Committee on Professional Education, reveals that there were 98 foreign students, 86 native students with prior public health experience, and 33 native students without such prior experience. Perhaps those schools with a preponderance of foreign students aim chiefly to provide training for foreign public health; those which accept students without previous experience, to provide initial preparation for the job.

School admission policies. Relaxation of the 3-year experiential requirements for most candidates might solve some recruitment problems, but necessary professional and personal characteristics should be part of the admission criteria of all schools. Intellectual capacity and professional knowledge should be such as to indicate ability to complete work at the master's degree level.

Curriculum policies. Part of the problem in setting educational goals is the lack of agreement on the area of knowledge to be included in public health. The number of electives offered at the schools varies from 15 to 127. More courses in the social sciences and administrative sciences are needed by many schools.

Teaching techniques. Prominent researchers do not always have teaching abilities. Responsibility for assuring the teaching skill of faculties should be assumed by individual schools. If teachers lack such skill when appointed, provisions should be made for their instruction on teaching arts.

Integration of field experience and academic study. The amount of field experience required of students by schools is minimal. A rotating system of short periods of academic training followed by field experience might be a better way of integrating the actual practice of public health with the student's instruction in theory. A few schools have approached this program in the major fields of study, but such a modification of present schedules would entail meeting a number of new difficulties. Problems to be solved would include maintaining a 12-month staff, finding satisfactory field training centers, and preparing local health departments for the addition of field training to their activities.

Provision of continuation courses. One of the needs of the practicing public health worker is constant study to keep abreast of recent developments in his field. Responsibility for providing short continuation courses for the professional worker after graduation belongs to the schools.

The health department's responsibility. Health departments should have active recruitment programs. They should help screen applicants and recommend to schools only those candidates who meet the requirements for advanced work. State and local public health training needs must be interpreted to budget directors by health departments. Finally, if public health objectives are to serve the continuing need for improved health, health departments and public health schools must sustain a mutual exchange of information on current needs.

Resistance to Change Requires Attention

To meet the challenge of relatively unexplored areas in public health, the content of health education of the future must secure changes in individual and group behavior and must develop more precise methods in stimulating and bringing about acceptance of such changes.

Nell McKeever, M.S.P.H., assistant chief, Public Health Education Services, Public Health Service, on behalf of herself and her chief, Mayhew Derryberry, Ph.D., spoke on what the changing public health picture means to health education programs and practices.

Health educators, McKeever believes, have the responsibility of finding ways of accelerating indicated behavior change in the way least upsetting to the established behavior pattern of the people and within their potentialities.

Future Programs

Health education will continue to look to the natural and developmental sciences for its content, but at the same time it will continue to turn to the social sciences for its methods and techniques, McKeever said.

She forecast that future health programs can expect to deal with alcoholism, and its emotional and social implications; with suburbia, and the impact of large population groups on obsolete administrative machinery; with varying population

groups, and the educational and social problems accompanying integration. Still others will attempt to bring effective public health measures to new industrial areas, overcrowded school systems, limited rehabilitation areas.

The medical education of tomorrow will demand creative, imaginative experiences to enrich the quality of medical and community leadership, she continued. Patient education, at present an example of how ideal learning situations are too often blocked by apprehensions and misunderstandings in emotionally charged situations, will present still another challenge, she noted.

Education should be ready to supply more scientific determination of the situation, to test methods to overcome the individual's and group's resistance to change, and to provide objective measurement of behavior change, she said. Education should know when to use the instruments and investigative procedures that are already available, she added.

Social Science Research

McKeever was of the opinion that the effective adaptation of social science techniques to health education will require both a closer working relationship with social scientists in practical field operations and more training in social science for health educators so that they will feel secure working in the behavior area.

Public health practitioners who are seeking an all-purpose answer to how to strengthen the process of health education may be overlooking the necessity for thoughtful diagnosis of the educational problem involved in getting people to benefit from the medical discoveries of the day, she believes.

For improvement in health to be achieved by the constructive action of individuals and groups, there is need for understanding, need to diagnose the individual's behavior, his beliefs, his motivations, his goals, and at the same time to acquire knowledge of the group's goals, traditions, beliefs, practices, values, and cultures, she said.

The public health profession, and health education in particular, can benefit from: (*a*) social science studies focused on the individual's attitudes and past experiences that facilitate progress or create barriers to change, (*b*) insight into the leadership-followership patterns established by the people, (*c*) exploring the accepted channels of communication, and (*d*) considering the objective advisability of change and the individual's or group's acceptance of change.

She cited the publications of Earl C. Kelley, Benjamin D. Paul, Fillmore H. Sanford, Kurt W. Back, Henry Clay Lindgren, Kurt Lewin, and Margaret Mead as making contributions applicable to the solution of educational problems in these areas.

"Unaccustomed as I am . . ." No Excuse at Tulane

Recognizing that knowledge in public health does not by itself always make an effective public health officer, the department of tropical medicine and public health of Tulane University offers two courses in oral communication for students working toward the M.P.H. degree.

Both courses are taught by John M. Erickson, assistant professor of business administration, who described the university's experiment in "breaking the communications barrier."

Tulane requires the oral presentation of a previously written term paper before students and faculty at the end of the academic year. Erickson said that dissatisfaction with poorly delivered papers plus realization that students were not well equipped to use the substantial body of knowledge they possess led to making the courses a regular part of the public health curriculum.

All public health officials should be able to communicate to other responsible officials and to the general public the significance of their work and what it means to the average citizen, he said.

If students could do no more than read their papers, they could not be effective in presenting their needs for an annual budget, in presiding over staff meetings, or in seeking luncheon club support for health campaigns, Erickson said. The Tulane courses not only duplicate these situations but provide opportunity for panel-type discussions before hypothetical audiences and for training in the handling of hecklers.

The beginning course gives practical experience in a public speaking situation and is a required 6 hours a week during the first quarter of the academic year. The work is designed to enable students to use the basic principle of communication, namely, that the speaker must secure and hold the attention of the audience on those ideas that tend to make the audience respond as the speaker wishes it to respond.

Along with the development of good speaking habits, the student learns to think in terms of his audience and to phrase his thoughts in words to which the audience will give the same meaning that he gives.

The second course teaches use of the oral communication principle in group situations. It is elective, and meets 2 hours a week in the second quarter. The student participates in informal committee work preparatory to a formal meeting in which the desired end is sought. Both situations are related to each other in organizational concept.

The courses have produced the desired development in effective oral communication, he continued. Students who were unable in the early classes to achieve directness in talking to others have changed into confident but not overconfident individuals. They show they have learned how to motivate audiences. Improved speaking manner, ease, and poise before a group, and the ability to convey ideas are the most obvious results, but most important, Erickson said, is to watch the growth of a personality as it finds new means to make life effective.

During the first sessions of a class, students show some resentment about a course which they consider out of place in a public health curriculum, he continued. The resentment is replaced by enthusiasm when they see their fellow students progress in the presentation of ideas. The improvement in the presentation of the term papers has been so marked that the faculty is convinced of the value of the courses. Graduates in their subsequent careers frequently refer to the value of the training.

Offer Sanitation Training In New York Program

New York State's comprehensive training program is offered before and during employment in order to provide competent, qualified sanitation personnel, according to Meredith H. Thompson, Dr.Eng., assistant director, bureau of environmental sanitation, New York State Department of Health, Albany.

Sanitation personnel receive coordinated and complete training. A full-time sanitation training specialist directs the program, he declared. The training unit plans, coordinates, and conducts most short courses for sanitation personnel.

Unless an efficient and continuous training program is provided, personnel cannot be expected to work at peak efficiency, he asserted.

The sanitation training program is part of the State public health training program for all department personnel. The State health department is convinced that coordinated and interdisciplinary training is basic to the team approach to public health problems, he stated. Training for health officers in New York State began in 1934, for public health nurses in 1936, for statisticians in 1938, for nutritionists in 1945, for health educators in 1948, and for sanitation personnel in 1951.

Preservice Training

Preservice training for sanitary inspectors may be an eligibility requirement to a beginning permanent position. The beginning permanent sanitary inspector in local health departments must have a high school education and 2 years' public health experience, he said.

These personnel ordinarily cannot obtain the prerequisite experience, and, consequently, a 3-month training course, approved by the New York State Public Health Council, has been made available and is accepted as the equivalent of 1 year's experience. The New York Field Training Center, at Mt. Vernon, N. Y., is a cooperative venture of the Public Health Service and the New York State Department of Health. The trainee may be granted a waiver by the public health council from the necessity of a second year of experience, Thompson explained, and thus he may be employed while he obtains the second year's experience.

Inservice Training

Inservice training prepares permanent personnel for progressively responsible or specialized positions, he said. Such training ranges from short orientation courses to a full year of academic study leading to a master's degree in sanitary engineering or public health.

Orientation is scheduled as soon as possible after permanent employment. About 1 week is spent in nonsanitation units of the health department in order to give the employee needed knowledge of the overall objectives, policies, and activities of the entire department, Thompson reported.

The employee receives about 11 weeks of orientation in sanitation. He spends 3 weeks in the central office and 8 weeks in various field offices, observing and working, he explained. After this first orientation, further orientation is continued during the succeeding years on a less formal basis.

Subjects for the short 3- to 10-day nonacademic courses include epidemiology, basic bacteriology, bacteriology of water and sewage, bacteriology of milk and food, sanitary chemistry applied to water, sewage, milk, and food, statistics in sanitation, refrigeration, dairy farm sanitation, milk pasteurization, plant sanitation, food sanitation, public water supplies, basic radiological health, radiological health instrumentation, educational methods, public speaking, and public health administration.

Courses are held throughout the State to accommodate city and county personnel and are given by health department or university specialists. Although attendance is not compulsory, Thompson commented, courses are usually oversubscribed and some applicants must wait until the class can be repeated. Attendance is usually limited to from 12 to 20 persons.

All State health department personnel are permitted to apply for and, if accepted, to attend those courses in which they are interested. Generally, an employee may attend two 1-week sessions per year, Thompson said. Selected engineers and sanitarians may be authorized to attend universities and colleges for formal academic training.

Child Health Services . . .

Georgia Canvass Finds Handicapped Children

The greatest single need in the rehabilitation of handicapped children is for family counseling, stated Samuel M. Wishik, M.D., M.P.H., professor of maternal and child health, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pa.

A study made by the Cerebral

Palsy and the Crippled Children's Societies of Georgia indicates that an estimated 10 percent of all children under 21 years of age have one of the 12 handicaps included in the study. Most of the handicapped children have more than one disability, he stated.

The Georgia study, according to Wishik, is the first attempt to estimate for a single community the prevalence of 12 handicapping conditions—cerebral palsy, cleft palate and lip, cosmetic abnormalities, epilepsy, eye disease and disturbance of vision, hearing impairment, heart disease, mental retardation, orthodontic and orthopedic conditions, personality disturbance, and speech difficulty.

Case Reporting

Both professional workers and interested citizens took part in the study, Wishik said. All persons in the community were requested to report to the local health department children whom they suspected of being handicapped. Copies of a set of questions were given wide publicity through churches, stores, newspapers, and other means. Parents, physicians, nurses, teachers, school health workers, neighbors, and friends of the children reported their handicaps to the societies.

Following 3 weeks of voluntary reporting, a sample canvass was made of every 10th household. The canvass technique was the more successful; only one-fourth of the handicapped children found in the sample households had been reported voluntarily. In general, handicaps found through canvass reporting included less severe ones which were not discovered by the voluntary method, Wishik noted.

Clinics

Ten clinics were set up for the 12 diagnoses. Four to ten professional disciplines were represented on each clinic team, and, he emphasized, all professional services were given without charge.

All children were classified according to a presumptive or working diagnosis made by a pediatrician on the basis of reports received. A sample was then drawn for each diagnosis, and 85 percent of the canvass report cases and 41 percent of the voluntary report cases were invited to the clinics. The percentages seen were 63.5 and 33.1, respectively.

The responsibilities of the clinic teams were: to confirm, deny, or correct the presumptive diagnosis; to assess the functional disability of each handicapped child; and to estimate the services needed by each child.

Among the voluntarily reported patients, diagnosis was confirmed for 63.4 percent and 77 percent were found with some handicap. These percentages were slightly lower (51.4 and 64 percent) for cases reported by canvass workers, Wishik said. But even so, Wishik found that the canvass was 50 percent more effective than voluntary reporting in discovering the needs of handicapped children.

The number per 1,000 children under age 21 with any handicap was 108. The numbers per 1,000 with each diagnosis were:

Cosmetic abnormality	43
Mental retardation	40
Personality disturbance	29
Speech difficulty	29
Eye disease and disturbance of vision	24
Hearing impairment	19
Orthopedic condition	17
Orthodontic condition	16
Heart disease	10
Cerebral palsy	5
Epilepsy	4
Cleft palate and lip	1

The average number of diagnoses per child was 2.2, and the percentages of children with multiple diagnoses were:

Number diagnoses	*Percent handicapped children*
1	32
2	30
3	19
4	12
5	6

In assessing disability, distinction was made between the child's personal adjustment to his handicap and maladjustment of his family to the situation, Wishik stated. Assessment of the degree of social rejection was based on community attitudes toward factors such as ugly appearance or strange-sounding speech. Each child's problem was considered individually. There was little correlation between the degree of physical disability and the child's vocational limitation, his family's reaction, and society's rejection.

The association of mental retardation and personality disturbances with certain physical handicaps emphasizes the importance of psychology and psychiatry in crippled children's programs, Wishik said.

Estimates of services needed by each child were made at a staff conference. All the children needed diagnostic appraisal and a plan of care. About 70 percent needed counseling or guidance or their parents needed education; about 10 percent needed institutional care, he stated.

To meet the need for family counseling, new administrative patterns were recommended, such as local field extensions of a rehabilitation center, direct focus on patients by social workers in health departments, major units for the handicapped in voluntary child and family agencies, and specialized programs attached to a coordinating or referral agency. "Close working relationship between counseling and other service programs is, of course, essential," Wishik emphasized.

Childhood Chronic Illness Control Progress Reviewed

Chronic illness and disability are not limited to old age but are found also in children and young adults, stated Thomas E. Shaffer, M.D., professor, department of pediatrics, College of Medicine, Ohio State University, Columbus, in reviewing progress

in controlling the common chronic diseases of childhood.

Although most chronic diseases cannot be cured, many can be prevented, Shaffer said. The progress of many more can be halted, and handicapping disability can be prevented if the disease is discovered and treatment is begun early. Periodic health appraisals and medical screening of school children are discovering many chronic illnesses during childhood, before the disease process is far advanced, he added.

"We know how to control rheumatic fever," he said. The problem is recognition of the streptococcal infections in children, administration of penicillin when the infections occur, and teaching parents the importance of continuing prophylactic treatment even though their children appear to be in good health. Diagnosis of rheumatic fever on physical examination is difficult, Shaffer stated, but reliable and clinically practical laboratory tests are available and can be carried out in most laboratories.

Congenital Heart Disease

X-rays, often supplemented by injection of materials into the blood stream to outline blood vessels and heart cavities, examination of blood samples taken directly from the heart, and electrocardiograms have made it possible to diagnose malformations of the heart with "almost the exactitude of engineering," Shaffer continued. Persons formerly faced with lifelong chronic disability because of malformed hearts can now be made normal, physically, through surgery, he stated.

Epilepsy and Diabetes

The electroencephalograph for diagnosis and medication with new nonsedative drugs are the two most notable recent advances in the control of epilepsy, Shaffer said. None of the antiepileptic drugs in use today cause mental deterioration, he stated, and all epileptic manifestations can usually be suppressed with the newer drugs, singly or in combination. Radical surgical procedures are available for those who do not respond to medical treatment.

Medical control of the disease has made it possible for epileptics to go to school with other children, to develop normally, and to go on to normal employment later in life, Shaffer said. Public realization of the fact that only a small percentage of epileptics are retarded mentally is increasing.

The development of insulins that can be taken only once a day is probably the most important advance in the control of diabetes since the discovery of insulin in 1922, Shaffer said. So-called regular insulin had to be given before each meal and often at bedtime. Since 1 child in 2,500 under the age of 15 years has diabetes, the effect of such a radical change in the insulin schedule upon the feelings of children about their disease and their social relationships in school and elsewhere is obvious, Shaffer stated. The current tendency to permit growing diabetic children to choose their food has also helped them to be considered as normal children, particularly in the classroom.

Shaffer said that medical science still has a "giant-size" step to take, the discovery of insulin that can be taken by mouth.

Cerebral Palsy and Tuberculosis

The rehabilitation of cerebral palsied children so that they can live and work to the limit of their capacity is an outstanding advance in the cooperative treatment of chronic disease, Shaffer stated. Another milestone is the combination of special education and therapy—physical, occupational, and speech—in the treatment of cerebral palsy.

Location of active tuberculosis among adults and their prompt isolation and treatment have greatly reduced the chances of infection in children, Shaffer said. Drugs can prevent tuberculous infection, even as they halt progress of the disease among adults, he said.

Obesity and Cancer

Obese children are no longer considered to be suffering from endocrine disorders, and treatment is directed toward controlling calories rather than prescribing thyroid and sex gland hormones, Shaffer stated. Obesity in childhood is often the result of the emphasis on weight gain in infancy, he said, and parents come to believe that plumpness is synonymous with health and happiness even after their children are no longer infants.

Health education and periodic health examinations contribute to the control of cancer, one of the most frequently fatal diseases of childhood. Radiation of tumors and surgical removal of new growth save the lives of children whose cancers are diagnosed in early stages, and chemotherapy has prolonged life in certain blood diseases. Medical treatment for the present is limited to the means of interrupting or reducing the progress of cancer diseases, Shaffer said in conclusion.

Cites Ten Principles For Rehabilitation

Recent advances in rehabilitating chronically ill adults may be applied to restore handicapped children to normal daily living and activities, according to representatives of the bureau for handicapped children, New York City Health Department.

Discussing the new techniques were: Helen M. Wallace, M.D., former director of the bureau and now director, department of public health, preventive medicine, and industrial hygiene, New York Medical College, and Jerome S. Tobias, M.D., bureau consultant in physical medicine and rehabilitation and professor and director, department of physical medicine and rehabilitation, New York Medical College.

Also: Robert S. Siffert, M.D., senior orthopedic consultant to the bureau; Margaret A. Losty, R.N., coordinator of the bureau's hospital consultation program; and Caroline H. Elledge, chief medical social work consultant to the department.

Ten Principles

They outlined 10 basic considerations for administrators and clinicians planning for the maximum restoration of handicapped children in the community.

1. The employment of a consultant in physical medicine and rehabilitation is as necessary as other medical consultants. His assistance might develop and evaluate physical medicine and rehabilitation services and develop standards for a department of physical medicine and rehabilitation. He might supervise the training in rehabilitation techniques for personnel in health departmments, institutions, and crippled children's agencies.

2. Personnel on the staffs of institutions, crippled children's agencies, and health departments need training in the principles of maximum self-sufficiency which are being taught to patients. With the newer knowledge of rehabilitation techniques, the teaching of activities of daily living, such as feeding, dressing, toilet care, wheelchair transfer, ambulation, gait training, to children in institutions and at home could become dynamic.

3. The training program should be developed, both for the faculty and trainees, along the multidiscipline approach, which requires a battery of professional skills. The approach should result not in replacement of one type of professional worker by another but rather in a supplementation of one by the other and should apply to the initial evaluation of the patient, periodic reevaluation, continuous supervision, and counseling of the patient and his family.

4. Services for the rehabilitation of handicapped children and adults must be coordinated and integrated. Chronic illness does not magically begin at any age. The artificial separation of the "under 21" and "over 21" age groups merely confuses community planning with the resulting duplication of efforts, funds, and services.

5. Since rehabilitation of the handicapped child is frequently not accomplished on a short-term basis, long-term care is often essential. Frequently the term has incorrectly meant long-term institutional care. It should imply the necessity of continuity of care, supervision, and rehabilitation for the child whether he is an inpatient or outpatient, whether he is at home, in school, in job training, or at camp.

6. If medical advances are to be made in improvements of methods, and if fiscal authorities and the public are to be convinced of the value of rehabilitation programs, studies are needed to develop even such basic evaluation data as the rehabilitation results to the individual patient for a given period of time, the most effective and successful techniques in certain types of disabilities, and the cost of rehabilitation per patient for each diagnostic group, by institutions and so forth.

7. The community's existing services and resources, available personnel, and public and professional interest are key factors in deciding priorities. A priority system must be established in the early stages of a program. Carefully worked out standards are essential to guide participating institutions as well as accrediting groups in approving adequate acceptable services for a payment program.

8. Quantitative and qualitative knowledge of existing services and resources and of current gaps in patient care should include: services provided by the hospitals and convalescent homes, resources for the homebound group of children, services provided at school, vocational resources, recreational programs, transportation facilities, long-term residential or custodial services, and the foster and child welfare services.

9. Close cooperation with the State and local agencies responsible for the administration of the newer Federal legislation would seem essential. The Hill-Burton and Vocational Rehabilitation Acts provide a means of improving and expanding services for handicapped children. Personnel engaged in crippled children's programs already have considerable knowledge about current services and facilities.

10. Purchase of care on a cost basis is vital, for if this cost, usually high, is not met in some way, then services are automatically decreased by reduction of personnel. Some essential services therefore will not be provided, and rehabilitation will lose effect. Logical sources, in addition to the patient and his family, are the categorical voluntary agencies and governmental agencies. Official and voluntary sources of funds should be regarded as supplementing each other in their grants, payment of salaries, development of new services, strengthening of existing services, purchase of equipment, research projects, training of personnel.

Immunization Programs Miss Many Infants

Immunization programs against diphtheria, tetanus, pertussis, and smallpox cannot be assumed to reach all of the children in a rural area during the first year of life, according to Alice B. Tobler-Lennhoff, M.D. deputy health officer of Maryland. In fact, she said, if the experience of one Maryland county is typical, they fall far short of the goal.

Every effort was made to immunize every child in rural Calvert County, Tobler-Lennhoff stated. A study showed that 59 percent of all the children born in the previous year (1952) had received partial immunization and only 44 percent had received the complete immunization course (3 injections). Tobler-Lennhoff also found that the smallpox vaccination program in this county was even less effective; only 107 out of the 412 in the study group had been vaccinated.

The immunization and smallpox vaccination status on December 31, 1953, of the 412 children born in 1952 in the study area—164 white and 248 nonwhite—are shown in the accompanying table.

During the past 5 years the county health department, according to Tobler-Lennhoff, has been conducting child hygiene conferences and has offered pediatric consultation to parents. Clinics in speech, hearing, mental hygiene, and vision are held at regular monthly intervals, in addition to a bedside program. All new parents were informed by postcard about health department facilities for their infants and given a recommended immunization and vaccination schedule.

Of the nonwhite children, 60 percent had received some immunization while only 55 percent of the white children had. However, 47 percent of the white group and only 40 percent of the nonwhite group had completed their immunizations.

Twenty-two of the white children were immunized by health department personnel and 67 by private physicians, whereas 131 of the nonwhite were immunized by the health department and 22 by private physicians. Eleven white and 65 nonwhite children were vaccinated by the health department and 22 white and 9 nonwhite by private physicians.

Of the 124 children neither immunized nor vaccinated by December 31, 1953, 24 were reported as having never been sick and having no medical supervision, according to the answers on a questionnaire. A large number, though seen by physicians for illness, rarely had checkups. The same was true for the partially immunized. A majority of the children were taken to their family physicians or clinics fewer than 6 times a year.

Despite intensive educational efforts, 41 percent of the children were not immunized by December 31, 1953, when ideally all immunizations should have been completed. Data not included in this study show that a large number of these children did receive immunizations in the early months of 1954.

Vaccination v. Immunization

Reasons given by Tobler-Lennhoff for the difference in accomplishment between vaccination and immunization included the following:

Smallpox vaccinations are not given during the summer months; during the winter months they are often put off on account of illness.

DTP immunizations start earlier, at the age of 3 months, giving those who attend clinics or go to a doctor irregularly a better chance to get at least a partial immunization.

Absences of known instances of smallpox for many years may have engendered some indifference to vaccination.

Ignorance of the State law requiring vaccination within 1 year after birth, its lack of enforcement, and the rigid enforcement of the school law requiring vaccination before a child enters school may have led to a general belief there is no need for early vaccination.

DTP immunization and smallpox vaccination status of 412 children born in Calvert County, Md., in 1952 on Dec. 31, 1953

Status	White	Nonwhite	Total
Immunized (DTP)	89	153	242
Not immunized	48	76	124
No information	27	19	46
Total	164	248	412
Vaccinated (smallpox)	33	74	107
Not vaccinated	104	155	259
No information	27	19	46
Total	164	248	412

Technical Development Key To Child Health Plans

An effective national or international maternal and child health program must take into account the stage of technical development in a country, according to Louis J. Verhoestraete, M.D., M.P.H., medical officer, adviser in maternal and child health, Pan American Sanitary Bureau, Regional Office of the World Health Organization, Washington, D. C.

Infant and childhood mortality patterns are closely related to technical and economic advances, he found, in comparing areas of different degrees of technical development.

In areas, containing one-fifth of the world's population, the infant death rate is lower than 50 per 1,000 live births; in other areas, with three-fifths of the world's people, there are about 100 or more infant deaths per 1,000 live births.

In the technically less developed areas, the mortality pattern points to emphasis on programs that will control the major communicable diseases and improve sanitation and nutrition, Verhoestraete observed.

Excess mortality in these areas extends throughout childhood but focuses particularly on the age groups of 0 to 1 year and 1 to 4 years, the data showed. The main causes of childhood mortality are the gastrointestinal, respiratory, and other infectious and parasitic diseases, all preventable and essentially dependent on environmental circumstances.

In the technically advanced countries, the low mortality rates in the 1 to 4 age bracket reveals that environmental causes of child mortality are well under control. Neonatal mortality, less dependent on the safety of the general environment than childhood survival, has become the outstanding problem, he said.

Expansion of general health programs and development of specific maternal and child health activities are the remedial measures for the high childhood mortality in the tech-

nically less developed areas, he observed.

In cognizance of probable slow development in many areas, particularly in rural localities handicapped by limited health and medical facilities, Verhoestraete suggested that the immediate programs aim at well-defined and limited objectives rather than an inclusive approach.

Proposed Measures

He offered a number of measures that may be applied by a team consisting of a semiprofessional nurse, an untrained village midwife, a teacher, and a sanitarian, with medical advice available on a visiting basis.

Breast feeding, he said, should be accepted as the surest life-saving device in an unhygienic environment since it provides safe nutrition and reduces opportunities for gastroenteric infection.

The nutritional problems of the weaning and postweaning periods, he continued, are most important in these areas, and improved nutrition for the lactating mother will help her feed her child more successfully for longer periods. Early feeding with available animal or vegetable protein, often imperative, should be truly supplementary rather than a replacement of breast feeding at 5 to 6 months.

In preventing the spread of diarrheal disease, he said, recent evidence has indicated that quantities of readily available water for personal and household use may be more effective than a limited supply of sanitary water. This knowledge, he believes, will influence future water supply policies in rural areas.

For children with diarrhea, he suggested a treatment method that may be safely applied by semiprofessional and auxiliary nurses to reduce fatalities. Rapid dehydration is a major contributing factor to deaths from diarrhea, he said. A simple method of rehydration consists of early ingestion of water with sugar and salt or of a simple glucose and electrolyte mixture.

Verhoestraete advocated caution in trying to promote with too much zeal the Western patterns of child rearing, which are themselves still in the formative phases.

In the fields of "harmonious growth and development," women in the technically less developed areas are not necessarily at a disadvantage, he said. Many of them seem to have a capacity for adjusting, without stress, to their pregnancy and prospective childbirth and to establish with ease stable emotional relationships with their newborn infants. In these circumstances, Western women seem, at present, to be more frequently in need of professional guidance and reassurance, he pointed out.

Fetal Death Factors Studied in New York

Ectopic pregnancy and spontaneous fetal death occur more frequently among nonwhite women than among white women, according to a study of the 58,285 fetal deaths reported in New York City in 1952–54 (see table).

The ratio of ectopic pregnancies to 1,000 live births was 6.8 for nonwhite women and 2.2 for white women. The spontaneous fetal death ratio was 153.5 for nonwhite women and 72.9 for white women.

This study, which provides such data on a communitywide basis for the first time, was reported by Carl L. Erhardt, director of the bureau of records and statistics, and Harold Jacobziner, M.D., assistant commissioner for maternal and child health services, New York City Department of Health.

Other findings of the study are as follows:

1. Ectopic pregnancies increase in frequency with advancing age of the mother; the rate of increase is highest for first pregnancies. They decline in frequency with an increase in the number of pregnancies.

2. Spontaneous fetal deaths also increase in frequency with advancing age of the mother. However, they rise in frequency with an increase in the number of pregnancies in the young age groups (15–19, 20–24, and 25–29) and decline with an increase in the number of pregnancies in the older age groups.

3. A history of previous fetal loss increases the risk of loss in the current pregnancy. The ratio of ectopic pregnancies to 1,000 live births rises from 2.4 for women who have no history of a previous fetal loss to 9.5 for those who have had three or more unsuccessful pregnancies. The ratio of spontaneous fetal deaths increases from 66.1 for women with no history of a previous fetal

All reported terminated pregnancies in New York City, 1952–54

Type of delivery	Number	Ratio per 1,000 reported pregnancies
All deliveries	548, 009	1, 000. 0
Live births	489, 724	893. 6
Fetal deaths	58, 285	106. 4
Therapeutic abortions	1, 512	2. 8
Illegal abortions	253	0. 5
Ectopic pregnancies	1, 413	2. 6
Spontaneous fetal deaths	55, 107	100. 5
Less than 20 weeks gestation	[1] 41, 790	76. 3
20–27 weeks gestation	4, 135	7. 5
28 weeks or longer gestation	6, 541	11. 9
Gestation not stated	2, 641	4. 8

[1] Analysis of spontaneous fetal deaths covers only those occurring before the 20th week of gestation.

death to 765.4 for women with a history of four or more previous fetal deaths.

Optimal Age for Pregnancies

The data on spontaneous fetal deaths for white women indicate that there is an optimal age for childbearing, Erhardt and Jacobziner declared. The data, they said, indicate first pregnancies are desirable before the woman is 25 years old; second to fourth pregnancies, during the 10-year interval from age 25 to 34; and the fifth or more pregnancies, between the ages of 35 and 39 years.

The data for nonwhite women are less clear cut, they remarked. However, there seems to be the least fetal loss for first pregnancies when the mother is less than 20 years of age.

The sharp rise of fetal deaths with age among nonwhite women as compared with the slower increase among white women may be due to earlier effects of a higher incidence of disease and poorer nutrition among the former, they said.

The finding of a distinct relationship between previous unsuccessful pregnancies and early fetal death confirms observations of many other investigators, they noted. They advised that women with such a history and their husbands be given special attention in preconceptual treatment clinics. Both the wife and the husband should be studied, they said, since defective genes or psychological or biological disturbance of either may be a causative factor in fetal loss.

Accidental Poisoning . . .

Cites Health Hazards In Home Hobbies

Although hobbies and do-it-yourself activities have made homes more interesting places to live in, they have also introduced new hazards to health, according to Marion Gleason, research assistant in the department of pharmacology and toxicology, University of Rochester (N. Y.) School of Medicine and Dentistry.

Many toxic materials which may predispose the user to shop accidents are widely used by home hobbyists today with little or no regard to the manufacturer's warning labels, she said. Episodic or chronic exposures to many "harmless" chemical products often result in drowsiness, dizziness, lack of coordination, psychic disturbances, and impaired vision. Any of these symptoms can result in deviation from protective habits or conduct, Gleason stated, and may mean the difference between safety and serious injury.

Thousands of products, such as solvents, rust removers, paint thinners, insecticides, and fumigants, not only can cause serious injury when instructions for use are ignored, she said, but in lesser exposures are capable of bringing out less obvious accident-predisposing effects.

"Doctors are aware of the toxicology of such agents as carbon tetrachloride, nicotine, methyl alcohol, and the organic phosphorous compounds, and the injuries to the liver, kidneys, heart, and brains from the inhalation and skin absorption of such poisons are fully described in medical literature," Gleason stated. "But the symptoms of nephritis and hepatitis, obscure anemias, amblyopia, cardiac failure, and some virus infections closely resemble those of exposures to a number of chemicals in common use in homes and farms," she said. "Thus, the causative factor in the illness may be overlooked by both the patient and the attending physician."

A popular misconception, she pointed out, is the belief that if a solvent or cleaner is not flammable it is safe. Stamp collectors, craft hobbyists, and insect collectors too often expose themselves to injurious dosages of carbon tetrachloride, Gleason pointed out, explaining that safety engineers have a simple recommendation for the safe use of the halogenated hydrocarbons: "If you can smell the odor, you are breathing too much of it."

She urged that amateur gardeners and farmers be made more aware of the toxic effects of nicotine and the dusts and vapors of many insecticides, such as the organic phosphorous compounds. In fact, Gleason said, it would be interesting to study the relationship of careless exposure to dangerous materials to the many tractor accidents on small farms.

Another study she thought might yield meaningful information would be a study of the causes of the falls from ladders by amateur painters. She thought that the breathing of turpentine fumes near a hot ceiling or in a badly ventilated room might be one of the leading causative factors.

Much has been done, Gleason said, to make toys for children safe, but intensified efforts by public health workers are needed to educate the adult public.

Data on Poison Mishaps Do Not Show True Rate

Accidental poisoning from farm work does not appear to be a major problem, according to L. F. Garber, M.P.H., chief of the industrial hygiene service, Missouri Division of Health, but farm safety measures designed to prevent poisonings should be improved and applied.

He pointed to advances in agricultural chemistry resulting in frequent introduction of new pesticides, defoliants, fertilizers, fumigants, and other potentially toxic products into farm operations.

Garber insisted that the signifi-

cance of poisoning as a cause of farm accidents has been minimized because of the large number of accidents resulting from farm machinery. The difficulty of obtaining adequate statistical data on farm poisonings needed to determine the relative importance of this problem is increased by the necessity of separating work accidents from home accidents and of establishing conclusions based entirely on mortality rates.

National Safety Council statistics, Garber said, show that approximately 50 percent of the 3,800 farm accident deaths occurring in 1954 were due to motor vehicle accidents, the result, in part at least, of increasing mechanization of farm tasks. Similarly, he reasoned that rapid advances in the field of agricultural chemistry and the increasing tonnage of chemicals used for agricultural purposes may result in more poisoning cases on farms.

Lack of clear definition of accident sites probably caused some overlapping so that an accurate analysis of data cannot yet be made, Garber indicated, pointing out that the International Lists of Diseases and Causes of Death excludes the "home" and "home premises" from the definition of "farm."

"There must be some overlapping between what is farm and what is home," he said, adding that "even if morbidity reports were submitted by physicians, the tendency of the small farmer to seek medical care only in emergencies, would probably affect the picture."

Substances Responsible

Chief among the groups of compounds listed by Garber as introducing poisoning problems on the farm are the organic phosphate and somewhat less toxic chlorinated hydrocarbon insecticides. Garber discussed investigations of the toxicity of, and exposure to, these insecticides in farm work.

He cited, among others, a study of exposure to parathion and cholinesterase response in Quebec apple growers, in which it was concluded that marginal intoxication was experienced by a group of 1 female and 32 male adults. Also, a study of 258 persons subjected to varying degrees of exposure to parathion in Washington apple orchards led to the conclusion that average cholinesterase values for those persons who were known to have had definite and consistent exposure showed significant reduction during the period of exposure.

In California, occupational diseases due to organic phosphate insecticides rose from 20 percent in 1950 to 40 percent in 1953. The California State Department of Public Health reported 391 cases of occupational disease caused by agricultural chemicals in 1954. Of 122 cases of systemic poisoning included, 101 cases were due to exposure to organic phosphates, with parathion exposure associated with 85 of the cases. Six reflected exposure to chlorinated hydrocarbons.

Other cases of accidental poisoning on farms Garber termed "miscellaneous," and listed under this heading lead poisoning among apple orchard workers, methyl bromide poisoning among fig processors, and ethylene chlorohydrin poisoning among workers treating seed potatoes. He called attention also to the condition sometimes described as "thresher's lung," resulting from the inhalation of dust from moldy hay or straw, and to cases due to familiar causes such as carbon tetrachloride used as a seed fumigant, carbon monoxide from internal combustion engine exhausts, and carbon dioxide from fermenting silage.

Midwest Incidence

Garber felt that the problem of poisoning on the small midwestern farm is of less magnitude than that encountered in other States. An examination of farm work accidents in Kansas in 1930–51 disclosed 7 deaths from absorption of poison gases and 4 deaths by solid or liquid poisons out of a total of 1,810 deaths.

Iowa reported 24 chemical-caused fatalities and 15 deaths from carbon monoxide poisoning in a total of 2,181 fatal work accidents among farm residents in 1949–53, while only 4 deaths by poisoning in 245 farm fatalities took place on Missouri farms during 1952–54.

Garber was of the opinion that the greater use of seasonal and temporary employees with little or no knowledge of farm operation was one of the factors for the relatively high frequency of poisoning accidents in Western States.

Poisoning Prevention Role Of Health Agency Stressed

Poison control activities which health departments and agencies can utilize effectively were reviewed by Ralph K. Longaker, M.P.H., chief, Home Accident Prevention Section, Public Health Service, and Charles M. Cameron, Jr., M.D., M.P.H., associate professor, University of North Carolina School of Public Health.

Official health agencies can be instrumental in reducing the number of accidental poisonings, they said. Cooperating with other groups, such agencies might determine the nature and extent of local hazards and develop professional and community education programs designed to alert the public, with appropriate emphasis on those which are seasonal or new.

Several health departments, they said, have made successful attempts to limit poisoning accidents. Campaigns in New York City and Arkansas have reduced dangers from wornout gas appliances and improper fuel oil storage, respectively.

Gases cause about half the annual 2,700 poisoning deaths. Victims of gas poisoning, which is most frequent in winter, are generally adults. Seventy-five percent of the gas poisoning deaths occur in the home.

Of the fatal poisonings from liquids or solids 80 percent occur in or around the home, and victims are usually preschool-age children. Sea-

sonal trends in liquid or solid poisoning accidents are not as pronounced as in gas poisonings, although there are apparent changes in seasonal exposure to various types of toxic liquids or solids.

More definitive epidemiological and etiological data on specific poisoning hazards in particular localities should be collected, Longaker and Cameron said. Sources for such data include death certificates and the files of local emergency clinics, police and rescue crews, physicians, and hospitals.

"If these reporting systems provide complete or representative coverage they may be developed on a continuing basis to provide a measurement of trends within the problem. They become a source of background data for the educational phases, and can be used as a means of evaluating control measures when they reflect significant decline or variation."

They believe such studies could provide health departments with working diagnoses of community problems which might be used as bases for planning measures to teach the public necessary safety techniques.

In addition to making use of public and private educational systems, home demonstration clubs, community health councils, organizations of parents and teachers, and other institutions, educational efforts should utilize the direct relationships of physicians, especially pediatricians, and professional public health personnel to the public, they said.

Urges Coordination In Poison Control

The increasing production of new chemicals and old standbys in new combinations necessitates national coordination of poison control efforts, according to George M. Wheatley, M.D., M.P.H., third vice-president of the Metropolitan Life Insurance Co., chairman of the Subcommittee on Chemical Poisons, American Public Health Association.

Valuable and harmless as all these chemical products are when properly used, Wheatley said, the problem is their misuse, particularly in the home.

Aspirin, kerosene, and lead poisoning are the major causes of death (fig. 1), Wheatley stated. About two-thirds of the deaths from accidental poisoning could be prevented if acetylsalicylic acid, the barbiturates, kerosene, lye, lead, and arsenic were kept out of reach of young children, he said.

Mortality from misuse of chemicals is only part of the picture. There are hundreds of nonfatal home-poisoning accidents for every fatality, according to recent data, Wheatley stated. More than one-third of the total number of deaths from accidental poisoning are among children under 5 years of age, he said. Here again the number of deaths are few in comparison with the number of serious hospitalized cases (fig. 2).

Control Measures

Various medical and governmental groups have made efforts to control the hazards of accidental poisonings. The main Federal legislation, since the laws of 1906 and 1910, is the Federal Insecticide, Fungicide, and Rodenticide Act of 1947. This law authorizes the Department of Agriculture to require adequate toxicological information, testing, and labeling of new pesticides before they may be sold.

Another important poison control measure, the Federal Caustic Poison Act might be properly reviewed and broadened in the light of current conditions, Wheatley said in pointing to chemicals, which though noncorrosive, may be fatal in relatively small doses.

Recent measures by medical groups began with the American Academy of Pediatrics Committee on Accident Prevention organized in 1950. The American Medical Association's Committee on Pesticides was organized to attack the problem on a

Figure 1. Types of accidental poisoning deaths in 834 children under 5 years of age in the United States, 1949–50.

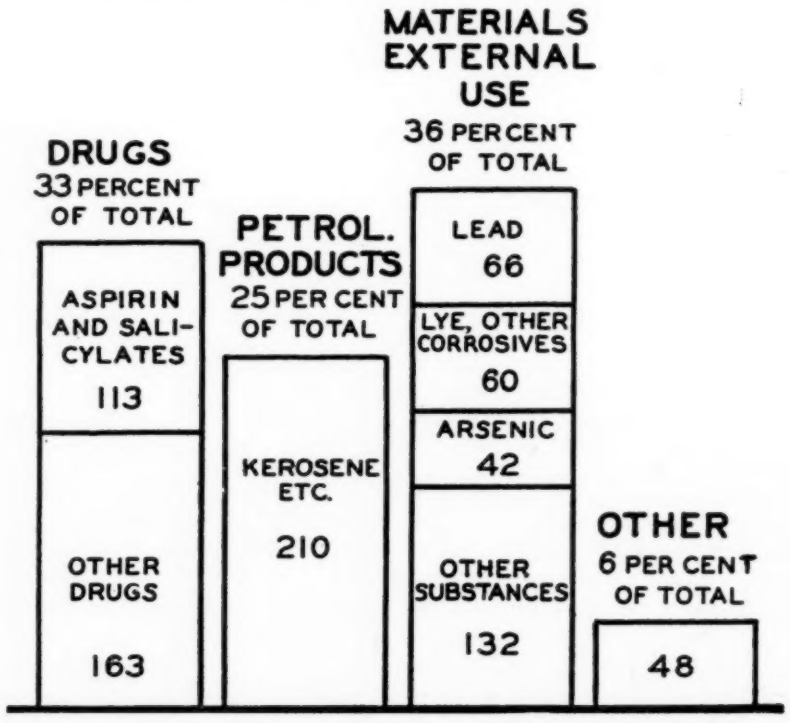
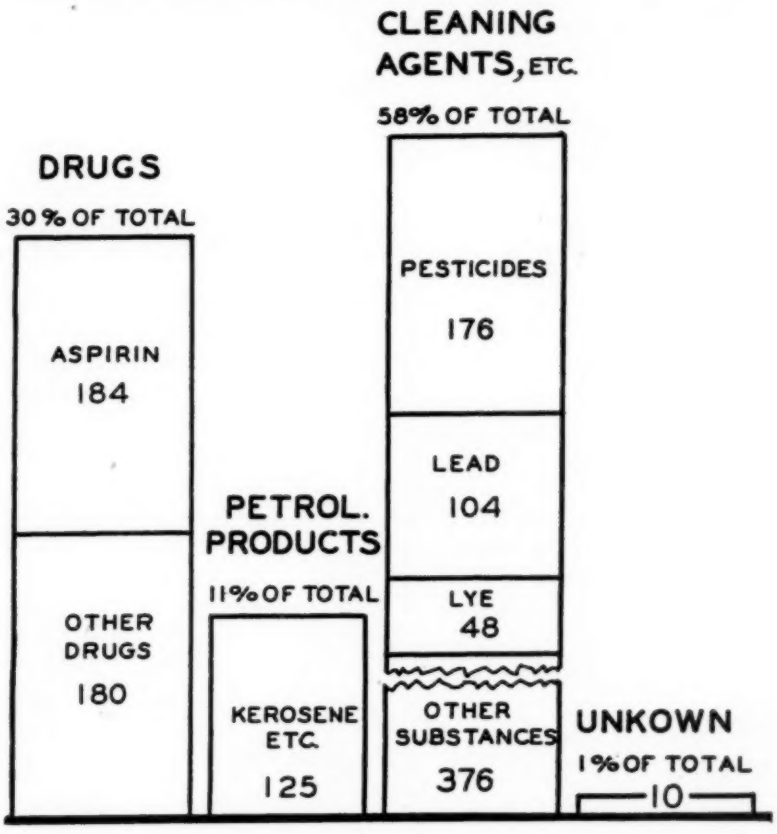


Figure 2. Nonfatal accidental poisoning cases of 1,203 children under 5 years of age, reported by 6 poison control centers in the United States, July 1954–September 1955.



wider front. By 1951, these two committees were working closely with the home safety conference of the National Safety Council and the Food and Drug Administration on various aspects of child poisoning. In 1952 the Lead Industries Association joined the circle along with other groups and individuals.

Poison Control Centers

A poison control center was established in Chicago in 1953, experimentally as one element of the program of the committee of the pediatricians, which also organized committees at State and urban levels. The Chicago committee prepared a manual on the treatment and recognition of toxic agents, which has been used in cities.

The Chicago experience has served as a guide to the formation of 13 other poison control centers, Wheatley said. These centers are located in Washington, D. C., Boston, Mass., Dallas, Tex., Durham, N. C., Indianapolis, Ind., Louisville, Ky., New York, N. Y., Phoenix, Ariz., Grand Rapids, Mich., New Bedford, Mass., Springfield, Ill., Newark, N. J., and Harrisburg, Pa.

Future Action

Recently, a Subcommittee on Chemical Poisons was formed by the American Public Health Association's Committee on Research and Standards, Wheatley said. It will give its attention to the epidemiology of chemical poisoning and to the role of health departments in this field.

The development of a clearinghouse for the control activities of official health agencies is another objective. To expedite these efforts and to avoid overlapping or duplicating work done by other groups, an exploratory meeting of representatives from the official and voluntary national organizations most concerned has been sponsored by the APHA subcommittee.

The continued expansion of poison control centers will provide a way of coping with emergencies and will also serve the ultimate aim of prevention, Wheatley said.

Laws Protect Food From Pesticides

"If all the laws are observed the hazard associated with the use of pesticides in the food processing industry is essentially nil," said Wayland J. Hayes, Jr., M.D., Ph.D., chief, Toxicology Section, Communicable Disease Center, Public Health Service, Savannah, Ga.

Sanctions on pest control in food handling industries are associated with law and consumer acceptance. The latter is the more subtle and powerful of the two, he commented. The final justification for pest control in food handling, he explained, is esthetic; the public believes that food should be clean and wholesome.

Laws on pest control and other aspects of cleanliness in food handling have, he said, several functions: to set standards of performance, which often represent a compromise; define technical details necessary to achieve the standards; establish administrative procedures; and promulgate sanctions against the small minority who might otherwise violate the regulations.

Legal Provisions

The Federal Food, Drug, and Cosmetic Act is the main law requiring pest control in all interstate food handling industries, Hayes said. More than 80 percent of the food seizures in 1950 were made because the food contained insect parts, rodent hair or excreta, or was decomposed, he noted.

However, he pointed out, the same law limits the means used to control insects or rodents, for it forbids the addition of poisonous or deleterious material to food and sets residue tolerances. In the United States, he noted, it is generally contended that no addition of pesticide to food is necessary or tolerable after harvesting.

Many States have laws similar to the Federal statute, he said, and various local codes supplement them. The local codes are very specific concerning floor and working surfaces, special food-handling equipment, and many other housekeeping details, he said. Sanitation, by reducing to a minimum the food and harborage available to insects and rodents, is the most important single factor in the control of pests, he declared. Nevertheless, in plants handling many tons of products there is bound to be some spillage.

The Federal Insecticide, Fungicide, and Rodenticide Act is essentially a labeling act for chemicals sold in interstate commerce to be used as pesticides. It provides for the registration of pesticides if, among other things, they are effective for the uses advocated, and they are safe when used as directed, he said.

Hazards of Misuse

There are hazards to the operator or to the food consumer which might follow neglect of regulation. Details on the toxicity of the older pesticides may be found in pharmacology texts, he stated, and information on the toxicity of the newer pesticides is available in the Clinical Memoranda on Economic Poisons, which may be obtained on request from the Technical Development Laboratories, Communicable Disease Center, Savannah, Ga.

Although nearly all the pesticides may be fatal if swallowed, there is small chance that these will be swallowed in lethal doses except with suicidal intent, he declared. Probably the most common danger to anyone applying insecticides or fungicides is allergic reaction following direct exposure. This danger is present also in the handling of produce treated before harvest. Pyrethrum used in space spraying of food-handling establishments can cause serious anaphylactoid reactions; lindane also has produced illness.

Fumigants, inhaled during the process of disinfecting grain, nuts, and dried fruits, present the greatest danger to the greatest number of operators, Hayes stated. Some fumigants are narcotics. Others, such as methyl bromide, have a mode of action not so well understood; there is usually a delay of from 4 to 6 hours after exposure before illness sets in.

Hayes said there was a fortunate trend toward the use of anticoagulant rodenticides, such as warfarin, which are slow to act but are equally as effective as the dangerous fast-acting agents such as sodium fluoroacetate (1080).

He said fly baits using TEPP or other highly toxic organic phosphorous compounds are safe when carried out to the letter of the instructions, but the danger of a single careless mistake is very great. Hayes commented favorably on the use of commercially prepared cords treated with Diazinon or parathion for fly-baiting. Cords, which are attached to ceilings and thus safely out of the way of working areas, have not yet been approved or registered but are subject to continuing experiments.

Small plants which cannot afford to maintain staffs for pest control operations are advised by Hayes to employ the services of professional pest control operators. He pointed out that 12 States and several cities in other States have laws requiring examination of pest control servicemen. He said the competent pest-control man understands that pesticides are never used except as a supplement to sanitation.

Mental Health Research . . .

Links Mental Deficiencies To Maternal, Fetal Factors

That there is a relationship between mental deficiency and abnormal conditions existing during the fetal and neonatal period is indicated by results of a controlled study of the birth certificates and hospital records of mentally defective children in several institutions in Baltimore and in two Maryland institutions for mental defectives, reported Abraham M. Lilienfeld, M.D., and Benjamin Pasamanick, M.D.

Dr. Lilienfeld is chief, department of statistics and epidemiological research, Roswell Park Memorial Institute, Buffalo, N. Y., and Dr. Pasamanick is professor of psychiatry and director of scientific research, Ohio State University College of Medicine, Columbus, Ohio. The studies were carried out while these investigators were at the Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

Histories of maternal abnormalities during pregnancy, especially toxemias of pregnancy and bleeding during pregnancy and labor, and abnormalities during delivery and the neonatal period were found more frequently for defective children than for their matched controls, Lilienfeld and Pasamanick reported. However, there were no differences related to length of labor and operative procedures during delivery between the two groups.

Maternal Age and Birth Order

Risk of mental deficiency increased with increasing birth order and was particularly high with multiparous young mothers, Lilienfeld and Pasamanick said. This was established

by comparing the number of observed defective infants with the number that would be expected at a given age and order. The percentage of total births in each maternal age-birth order bracket was multiplied by the total number of defective children born in all brackets to determine the number of defective children that might be expected in each. A ratio below 100 is less than the expected number; above 100, more.

For whites, the ratio of observed to expected cases of mental deficiency, expressed as percentages (see table), increased from 52 for the first child to 391 for the sixth child; for nonwhites, the percentages were 76 and 163, respectively. For both races, the ratio of defective children was high for mothers under 20 years of age, decreased to a low point for mothers 25–29 years, and was highest for the group aged 35 and over.

The number of study cases was too small to determine whether the influence of maternal age and birth

Observed and expected numbers of mentally defective children without associated defects, by maternal age and birth order

Maternal age (years)	Birth order												Total	
	1		2		3		4		5		6 and over			
	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.	Obs.	Exp.
	White													
Under 20	23	33. 3	17	5. 6	8	0. 8							48	39. 7
20–24	46	87. 4	51	41. 1	18	12. 7	13	3. 8	11	1. 3	1	0. 4	140	146. 7
25–29	19	48. 9	22	45. 6	32	19. 8	12	8. 5	13	3. 8	16	3. 1	114	129. 7
30–34	7	18. 4	15	24. 3	12	15. 3	6	7. 3	4	3. 8	27	5. 8	71	74. 9
35 and over	7	6. 4	11	9. 0	6	7. 7	5	5. 2	5	3. 4	24	8. 1	58	39. 8
Total	102	194. 4	116	125. 6	76	56. 3	36	24. 8	33	12. 3	68	17. 4	431	430. 8
	Ratio of observed to expected (percent)													
Under 20		69		304		1, 000								121
20–24		53		124		142		342		846		250		95
25–29		39		48		162		141		342		516		88
30–34		38		62		78		82		105		466		95
35 and over		109		122		78		96		147		296		146
Total		52		92		135		145		268		391		
	Nonwhite													
Under 20	53	63. 1	30	23. 5	16	6. 6	2	1. 6			1	0	102	94. 8
20–24	27	33. 0	20	32. 9	23	24. 5	20	14. 6	6	7. 0	5	4. 1	101	116. 1
25–29	3	11. 0	9	12. 7	9	11. 3	5	10. 2	7	8. 9	21	14. 9	54	69. 0
30–34	2	4. 8	5	5. 1	2	5. 3	1	4. 9	7	4. 7	29	16. 5	46	41. 3
35 and over	2	2. 1	1	2. 1	3	2. 2	9	2. 6	3	2. 5	29	16. 7	47	28. 2
Total	87	114. 0	65	76. 3	53	49. 9	37	33. 9	23	23. 1	85	52. 2	350	349. 4
	Ratio of observed to expected (percent)													
Under 20		84		128		242		125						108
20–24		82		61		94		137		86		122		87
25–29		27		71		80		49		79		141		78
30–34		42		98		38		20		149		176		111
35 and over		95		48		136		35		120		174		167
Total		76		85		106		109		100		163		

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order was independent of the influence of abnormalities of pregnancy. Abortions, stillbirths, premature births, and neonatal deaths were no more frequent for mothers of mentally defective children than for mothers of the control group, Lilienfeld and Pasamanick said.

Severity of Defect

Among the white children, no association was found between abnormalities of pregnancy in the mother and intelligence quotients of the child or severity of the mental defect. Among nonwhites, however, histories of abnormalities of pregnancy in the mother were more frequent for the children with the lower I. Q.'s and the more severe degree of mental defects, Lilienfeld and Pasamanick said.

Reproductive Casualties

The relationship between maternal and fetal abnormalities and mental deficiency is similar to the relationship between these abnormalities and stillbirths, neonatal deaths, cerebral palsy, epilepsy, and certain behavior disorders in childhood, they stated. This suggests that there is "a continuum of reproductive casualty composed of a lethal . . . and a sublethal component." They described the lethal component as consisting of abortions, stillbirths, and neonatal deaths. The sublethal component consists of cerebral palsy, epilepsy, and behavior disorder. "The results of this study suggest that mental deficiency should be included in this sublethal component," they said.

The studies suggest that organic brain damage sustained during the fetal period is an important cause of these neuropsychiatric conditions, they stated. Also suggested is the possibility that anoxia may be a more important factor than mechanical trauma. In addition, the relationship of the varying degree of association with specific conditions noted in the study appears to indicate that the specific conditions represent varying degrees of organic brain damage.

Thus, they continued, it is possible to "infer that a greater degree of brain damage results in cerebral palsy, a lesser degree in mental deficiency or epilepsy, and minimal brain damage in childhood behavior disorders. The finding of these grades of associations paralleling clinical severity . . . support the existence of the hypothesized continuum of reproductive casualty."

They declared that this concept of a continuum of reproductive casualty suggests the need for further study to determine the risks of development of neuropsychiatric disorders associated with reproductive casualties and emphasizes the importance of care in diagnosis and of the development of more precise methods of diagnosing brain injuries.

"Any attempt toward preventing these neuropsychiatric conditions must of necessity be directed at the prevention of abnormal conditions associated with pregnancy and parturition," Lilienfeld and Pasamanick concluded.

Urges Intensive Research In Decay of Family Unit

Since nobody knows what effect present-day mobility will have on family life, Robert G. Foster, Ph.D., director, Menninger Foundation Marriage Counseling Service, Topeka, Kans., believes the trend toward decay of the family unit should be studied by long-term research in the field of human relationships.

Every social group, particularly the family, requires some kind of place identification, Foster said. Little is known about the relationship between mobility and family solidarity or a place basis for family life, he noted. He remarked that there is a tendency toward the extreme of minimum space for family living, particularly for families that are mobile. Progress, so called, has eliminated the old hospitality of a generation ago. The front yard has become a public park, the backyard a public playground, the automobile a movable front porch.

Common contacts, homogeneity of values, and the life principle or dynamic element within the family, he continued, are also factors in family stability that a population of salaried transients is losing, he noted.

The life principle first appears as an ideal common to the two who marry. The more similarity in cultural, educational, and religious background, the more easily formulated is their family purpose.

"There is some question as to whether many couples who marry have other than a very vague goal in relation to their ultimate objective and the dynamic purpose of their marriage," he said.

Signs of Disintegration

Personal, social, and family disorganization, on the increase, is linked to delinquent behavior, crime, mental illness, and other social evils, Foster said. Signs of social change, he continued, are seen in the shift from rural to urban population, decrease in size of families, new inventions and ways of living, and changing cultural values. Changing values as to sex mores, marriage, and rearing of children have affected adjustment within the home. Emancipation of women has affected their role as wives, mothers, and managers of households.

However, sociologists differ, he added, as to whether the changing values are part of a normal progressive movement of social change for the better or whether they are the beginning of the end of our type of civilization.

Family disintegration is described in Halliday's "Psychosocial Medicine, A Study of a Sick Society," he said. According to Halliday, when a formerly socially healthy group becomes weakened, whether the causes are from within or without, the group loses its coherence, becomes repellent, suffers dispersal, ceases to be able to fulfill its particular social function, and when it can no longer produce social good produces social evils.

Halliday's remedy for individual and group sickness is integrated

medicine, which speaks of a "healthy person in a healthy society," and which is based on sounder logic, Foster thinks, than a "healthy mind in a healthy body."

Long-Term Research

Foster noted a lack of cooperative specialization, on the part of the sciences and professions concerned with family life, in understanding the etiology of individual and social problems. He told how professional unionism among the organizations most concerned with family life led them to function as pressure groups and to include as members only those who met certain standards. These agencies, because of their fragmentation, are not helping the family do its important job of child rearing and maintaining itself as a unit over a long period of time, he commented.

"We need to set up centers to study how to get mental and other health practices incorporated into the daily living of everyone in our society," he urged. He suggested evenly distributed financial support for research, training, and treatment, and that, as the middle step between research and application, long-time projects be conducted over several generations. These might help demonstrate how individuals, through family experience, can grow up to become mature, mentally and physically healthy people; how the resources of the community can be analyzed and used to further the objectives of better health through education; and how existing organizations and the community can utilize the results of such effort.

Health Service Improved Through Group Learning

The use of a teaching experience which was part of the day-to-day program of a local health department, to improve a health service while the service was given, was described in a discussion of group learning in mental health practice.

The 5-year group project in the well-baby clinics of the Louisville and Jefferson County Board of Health, Louisville, Ky., served as the basis for the discussion presented by Marie Goik, R.N., M.S., nursing consultant, United States Children's Bureau, San Francisco, Calif., and Henry H. Work, M.D., associate professor of psychiatry, University of California Medical Center, Los Angeles, Calif.

Objectives of the Kentucky mental health study, they said, were to improve methods of teaching physicians and nurses, to integrate general public health nurses into teaching programs, and to present methods of caring for mothers and babies so that clinic services were supplemented by mental health values. The study proved the value of the technique in intensifying and consolidating learning experiences, they said.

Students included graduate and student nurses, medical students, and residents in pediatric training. The teaching staff consisted of a pediatrician-psychiatrist, a psychiatric social worker, and a public health nurse trained in mental health nursing, they stated. Consultation services of a psychologist and a nutritionist were available. Administrative personnel participated in the planning, thus facilitating decisions as to time and personnel allocated to the project.

The major teaching effort was directed toward the training of residents in pediatrics and the public health nurses who worked in the well-baby clinic. Seminars for each group were held over a 1-year period to give the students a general understanding of the growth of a child and the mental health problems of mothers and children, Goik and Work stated. Courses in personality development were included for all students.

The seminars were held concurrently with the clinics. Students were separated according to disciplines and teachers were matched to the student groups. In the early seminars, there was a tendency to underestimate the students' knowledge; later periodic review was required to determine if instruction was proceeding too fast, they said.

Seminars demonstrated individual physical and psychological development and the relationships established during growth. Case examples and audiovisual material were used and, whenever possible, clinic cases were linked to mental health films illustrating the principles involved. Films were chosen which might aid the students to understand the cases seen in the clinics.

Since it was not possible for formal teaching to precede practical application of knowledge, difficulties encountered in the clinic were discussed in the seminars, they said. This enabled the teaching staff to modify its work so that principles were more closely linked with practical application.

Clinics

The actual operation of all well-baby clinics in the Louisville and Jefferson County Board of Health was entrusted to graduate nurses, Goik and Work said. Assignment of pediatric residents to individual clinics for 6-month periods enabled the residents to become acquainted with clinic personnel and with the patients.

A member of the teaching staff was present during the physician's examination or worked with the nurse in her direct contact with the patient, they reported. Such observation of treatment, examination, or technical procedure resulted in a better appraisal of the student's clinical approach. It also gave the instructor an opportunity to evaluate the patient and to assist the student in contacts with patients, teaching the student the value of giving attention to minor and seemingly unimportant comments of patients.

At the close of each clinic, the teaching staff, the residents, and the nurses discussed the patients and the treatment procedures, they stated. Later, members of the teaching staff might accompany the nurses, at their request, into the patients' homes.

Postclinic Conferences

Postclinic conferences brought together the accumulated knowledge of students from all disciplines. It provided for discussion of the patients and the reactions of the members of the group to one another, Goik and Work stated. The teaching team tried to keep the discussions patient-centered. Even when personal needs of the students arose, the teaching staff used examples of similar situations among patients and fellow students instead of centering the discussion on the student involved, Goik and Work stated.

In these conferences, they said, both physicians and nurses learned how to deal with various types of clinic patients. The teaching team was able to improve understanding of physicians and nurses for each other's difficulties and to help the patients. Nurses and physicians in turn presented cases to the group and shared their experiences and feelings. Having all student groups represented in the conferences facilitated teaching and assistance to the patient as well as understanding between representatives of the disciplines on the teaching team.

Mental Health Section Established

Giving action to the theme of the 1955 conference—Where Are We Going in Public Health?—the governing council of the American Public Health Association established a new APHA section on mental health when it met in Kansas City.

Establishment of the new section recognized the need for intimate integration of mental health within the structure of the American Public Health Association. Chairman of the section is John D. Porterfield, M.D., director, Ohio State Department of Mental Hygiene and Correction, Columbus.

Prior to the meeting of the governing council, two regular program sessions and a luncheon were devoted to mental health needs within public health services.

The luncheon meeting was addressed by Leonard A. Scheele, M.D., the Surgeon General of the Public Health Service. Dr. Scheele traced the developments in mental public health of which the formation of the new section was the logical conclusion.

In the program sessions, papers were presented on the social drift of schizophrenia patients, the distribution of elderly adults in the population, and their health and mental health problems.

Two other papers took up the subject of mental deficiency: One dealt with its distribution in a county, and the other with the relationship between the hypothesis of fetal wastage and mental deficiency. Another paper discussed prematurity and its relationship to mental deficiency and various neuropsychiatric conditions.

Certain of these studies will appear in forthcoming issues of the *American Journal of Public Health*, and others have been included in the news coverage of the annual APHA conference appearing in this issue of *Public Health Reports*.

Other activities at the conference reflected the growing concern for coordinating mental health and public health activities.

A full session of the APHA public health nursing section listened to a panel discussion, led by Ira V. Hiscock, Sc.D., on the role of the public health nurse in mental health.

The Committee on Research and Standards heard and accepted a report on mental health.

The Committee on Administrative Practice established a subcommittee on mental health. The committee, like the governing council, is one of the basic policy groups in the association. It is responsible for many of the publications issued by APHA.

Other officers of the new section are: Paul V. Lemkau, M.D., vice chairman, New York, and Rema Lapouse, M.D., secretary, New York. Members of the section council are Dorothea Dolan, M.S.W., Illinois, Ernest Gruenberg, M.D., New York, Morton Kramer, Sc.D., Maryland, Benjamin Pasamanick, M.D., Ohio, and Ruth Simonson, R.N., New York.

The mental health section welcomes as members all who are interested in the epidemiological and administrative problems of mental health services for the public.

Application blanks for membership in the American Public Health Association may be obtained from the headquarters office at 1790 Broadway, New York 19, N. Y. Membership in the mental health section may be requested at the time of writing the application.

School Health Practices . . .

Find Familiar Sounds Test Best for Preschoolers

The University of Denver Hearing Center is recommending that health departments try the center's adaptation of Glorig's familiar sounds technique when they test the hearing of young children.

A pilot study, reported by the director of the hearing center, Marion P. Downs, M.A., has shown that a dog's bark, an auto horn, a telephone bell, and other familiar sounds are more readily identified by children 2 to 5 years old than are the unfamiliar tones heard in the individual pure tone sweep check.

The familiar sounds test introduces a technique which had not been attempted in the screening of hearing for diagnostic purposes until it was tried in the Denver study.

The test answers the long search for a preschool screening device by investigators concerned with the importance of full hearing during the child's formative period of language development, Downs said. The diagnostic value of the pure tones is retained by virtue of filtering each sound in significant frequency band widths.

When applied to 350 3-year-olds in the survey, the familiar sounds test found a larger percentage of medically preventive cases and was easier and faster to administer than the pure tone test, she reported. Only 18 did not cooperate. The other children responded so well that the test is recommended for case finding in the first 2 grades and among preschoolers. Screening time need take only 2 minutes for each child if orientation is given in prescreening sessions rather than during the actual testing.

The individual pure tone sweep check is the only pure tone test which can be presently relied on for good results for kindergarten through second grade, Downs said. It also requires a technician well trained in audiometry with children. The Massachusetts test, the Glorig audiometer, and the Reger-Newby audiometer provide fast group screening methods from the third grade on, she noted.

Now that these tests, including the familiar sounds test, offer reliability for school use at all grade levels, it remains for health departments to pursue hearing programs with proper otological and educational followup, Downs concluded.

Preschool Study

In the Denver study, a series of familiar sounds were recorded after being filtered into fairly narrow frequency band widths. For example, a dog's dark as recorded contained only the frequencies 1,000 to 2,000 cycles per second. Two sounds were recorded at the 250–750 c.p.s. band width, 2 at the 1,000–2,000 band, and 2 at the 3,000–5,000 c.p.s. band width. The band widths were considered sufficiently diagnostic for medical purposes.

The child first heard the sound at a loud level of 50 decibels. He was then asked to point to a picture representing the sound. One sound at each band width was presented to each ear. He was then told to listen while the sound was repeated at 15 db. When he failed to indicate that he could hear at any one band width, he was rechecked.

In addition, the child was also given a pure tone sweep check at 15 db. and told to raise his hand on hearing a tone. Any failure in either screening technique was later retested by a clinical threshold audiogram. On-the-spot threshold tests were given at random to 1 out of every 5 of the 350 children. Reliable responses were obtained on every retest.

Eight percent of the children were found by the threshold tests to have significant losses of 15 db. or more. Of this 8 percent, 96 percent failed to pass the familiar sounds test whereas only 3 percent had failed the pure tone screen. The familiar sounds test missed only 4 percent of the children with significant losses while the pure tone test missed 61 percent. The incidence of unnecessary rechecks was lower for both tests than is normally expected: 5.6 percent of the children found to have normal hearing in the threshold tests did not pass the familiar sounds test as compared with 2.4 percent by the pure tone screen.

Of the 25 final failures, medical reports were obtained on 20, 14 from otologists and 6 from pediatricians. The reports confirmed the presence of ear pathologies. Eleven of the failures have received medical treatment and followup audiograms. Although the followup is still in progress, 3 have been restored to perfectly normal hearing.

A Healthful Environment Is School Child's Right

A good mental health program, healthful physical surroundings, health education in the school, and adequate health services in the school and community should all be a part of the school child's environment, according to Marie A. Hinrichs, M.D., Ph.D., director, bureau of health services, Chicago Public Schools, Chicago, Ill.

Although each has its separate part, the home, the school, and the community share responsibility for providing a healthful environment for the child, Hinrichs said. The home prepares him for his school experiences. If he has been taught respect for authority, for the dignity of work, and for the rights of others, if allowance has been made for his shortcomings, and if his failures have been accepted with understanding, it will be easier for him to move on to the larger environment of school, Hinrichs stated.

Home and School

Both home and school are working toward the development of a healthy, happy adult who will work for the creation and maintenance of a desirable community for himself and his family. To function effectively, the home and the school must work together, she said.

Parents, teachers, and administrators can all contribute toward providing a "healthful emotional climate" for the child, Hinrichs stated. A wise administrator will sponsor a curriculum of healthful living, with emphasis on day-to-day problems rather than on academic subjects, and an understanding teacher will be a child's most frequent counselor and guide.

Conferences with parents as part of the teaching plan will bring about the most effective results in health education, and joint planning in all areas will make for rapid and lasting progress, Hinrichs asserted.

Community Responsibility

The effectiveness with which parents, teachers, and school administrators present their problems to civic leaders will determine the degree of community acceptance of responsibility for health and safety, she stated.

Community responsibility for health and safety includes adequate fire and police protection; traffic control; inspection of buildings for structural stability and safety of stairs; sanitary control of community water supplies, their use, and the disposition of dissolved or suspended wastes; and supervision of garbage and refuse disposal, lighting, heating, and ventilation, Hinrichs said. The hazards of working with complex machinery and the danger connected with the use of atomic energy should be kept constantly in mind, and possible causes of accidents should be sought and removed.

Although these are community responsibilities, Hinrichs said, competent individuals in the home, the school, and the community should be alert to detect and report any deviation from accepted standards in these areas.

In conclusion, Hinrichs said that recognition of the need for joint support of the school health program by all segments of the environment—the home, the school, and the community—will be the most effective means of promoting the health of the school child.

Norm Selection Is Important To Health of School Child

School health workers measure the growth of children to describe characteristics, to identify undesirable deviations from normal, and to select children for special study, stated Howard V. Meredith, Ph.D., professor of physical growth, State University of Iowa, Iowa City.

Care should be exercised in selecting standards, or norms, of growth, Meredith said. It is important to recognize the differences between norms for description, for appraisal, and for screening, he emphasized. School health workers should be able to turn records of height and weight into interesting information on growth and into useful aids in health appraisal.

Descriptive Norms

A descriptive norm should not be confused with norms for appraisal or evaluation, Meredith continued. For example, a norm may be constructed to describe the height status of a group of schoolboys, all of the same age, in a particular geographic area. Records of the boys' measurements are first arranged in order, from the shortest to the tallest, and then divided into categories at the 10th, 30th, 70th, and 90th percentiles.

Using these specifications, it can be determined whether a boy is tall, moderately tall, average, moderately short, or short. Such a norm is valuable for description, but it does not provide a basis for determining whether a boy is undesirably tall or whether he is retarded in height, Meredith pointed out.

Appraisal Norms

Norms for appraisal, or evaluation, are used to determine "whether the organism is satisfactory or unsatisfactory, fit or unfit, healthy or below par," Meredith stated. Such norms are more difficult to construct than norms for description.

Before constructing appraisal norms, investigations must be made to determine the relationship between "what is valued and what is projected for normal use," Meredith stated. In connection with height, information would be needed on such points as the consistency with which a slow increase in height is associated with the onset of disease; a rapid increase with low resistance to fatigue; and an average increase with deficient diet or frequent illness or both.

Information would also be needed on the degree of association between the rate of increase in height and nutrition, endocrine function, and physical activity. Few controlled investigations of this type have been made, Meredith said.

Screening Norms

Norms for screening do not appraise but they do more than describe. "In essence, they represent the joint utilization of two or more norms for description in ways suggested by clinical experience," Meredith stated.

Clinical observations indicate that screening in terms of growth characteristics is valuable but that slow growth or slender build do not necessarily indicate poor health, he said. Body measurements are "fruitful adjuncts to the medical examination of school children," and the use of screening norms brings to the attention of school authorities children whose health deviates sufficiently from normal to justify a medical examination to determine whether their health is satisfactory or whether they need treatment.

Selecting the Norm

School health workers usually select norms constructed by others instead of constructing their own tables and charts, Meredith said. They should choose norms that will describe and screen rather than appraise and that will portray in correct perspective the growth characteristics of the pupils with whom they deal, he stated.

It is important that measurements of height and weight be carefully taken and that norms be accurate and up to date, Meredith said. In this connection, he called attention to the fact that school children today are taller by several inches than school children in 1900 and that, in girls, this more rapid development in body size has been accompanied by earlier appearance of the menarche.

In conclusion, Meredith said that norms provide the school child with a record that accompanies him from grade to grade, they furnish the health education teacher with resource material on individual variation in growth, and they bring deviations in growth status and progress to the attention of school personnel.

Suggests Economical Ways To Improve Ventilation

With an accumulating backlog of school construction and insufficient funds to meet even basic needs, Constantin P. Yaglou, M.S., professor of industrial hygiene, Harvard School of Public Health, urged that every legitimate measure be taken to cut school building and equipment costs.

Health requirements and codes for ventilating schools are not keeping pace with school construction, Yaglou said in discussing possible savings that can be made by simplified systems.

The fresh air requirements, according to Yaglou, have traditionally been based on the quantity required to dilute offensive odors to an acceptable concentration. Recent attempts to replace this criterion with one based on bacterial counts have not been completely successful. Yaglou added that no definite relation has yet been shown between sanitary ventilation based on bacterial counts and the spread of acute infectious diseases in occupied rooms, with the possible exception of measles and chickenpox.

The incidence of upper respiratory infections in Navy training station barracks was related not to the floor area or cubic space allowed per person, but to the number of persons housed in a room, Yaglou said, in recalling a World War II study. However, the study was not adequately controlled, he said, and therefore, the influence of other factors was unknown.

Problems and Suggestions

The overheating of buildings by solar heat is primarily an architectural problem, Yaglou said. He was of the opinion that the high volume of air change required for controlling solar overheating can be reduced at least 50 percent by the use of suitable overhangs and other shading devices, by substitution of heat absorbing glass for ordinary glass, and by improving distribution systems so as to handle air colder than 55° F. without causing drafts. Any rigid specification of air supply above the minimum needed for odor control is meaningless and has no place in statutory codes, he stated.

Automatic regulation of radiators and convectors is also essential to control overheating, he said, especially in rooms subjected to varying solar loads. He also favored a certain amount of variability, not exceeding 2° F. ±, the comfort level to exact temperature controls.

Since comfort and health are affected by drafts and steep vertical temperature gradients, he recommended that the air movement be kept below 40 feet per minute and the vertical distribution of temperature be controlled at 1½° F. per foot of height in the occupied zone.

The drawback to using jacketed space heaters in rural schools, Yaglou said, was the stratification of the cold air at the floor and overheating in the breathing zone. Studies showed that New York State rural schools using this inexpensive heating method had a much higher absentee rate from respiratory illness than the city schools.

He said that either the lower cost window-gravity systems or the more expensive mechanical ventilators have shown equally good results as far as respiratory disease incidence is concerned. The positive ventilation provided by the unit ventilator in all weather conditions is its main advantage, he said, but it is higher in cost, produces fan noise and some drafts, and requires servicing of motors.

Yaglou said significant savings could be realized by finding a substitute for vent flue exhausts required by law. A less objectionable substitute is a small fan-motor unit that would exhaust the used air from individual classrooms directly to the outside through a hole cut in the wall and equipped with check louvres. Such a unit, he pointed out, can be used with mechanical or modified window-gravity supply systems without encroaching on fire regulations. Smoke, in case of fire, would be ejected at the source.

Yaglou said the recent trend toward one-story prefabricated steel schools offers good possibilities for simplified ventilating systems. Standardization and elimination of costly fire-escapes, fireproofing, stairways and stair halls, duplicate toilets and extra exits, are among the economies offered by this type of construction. Properly designed for the climate, the one-story structure is particularly adaptable to suburban residential districts, he said, but he doubted that it was the best investment for congested city districts. Other savings Yaglou cited could be effected by reduction of ceiling heights, and adaptation of a single

all-purpose room combining auditorium, playroom, and cafeteria functions in elementary schools.

State Ventilation Regulations

There are now 18 States, 1 more than in 1930, having no codes governing the heating and ventilation of public schools, he reported. Nine States have general provisions stipulating only "adequate" heating and ventilation. The remaining 22 States, 1 less than in 1930, have statutory or State board regulations specifying various requirements.

The 22 States exercising controls require a minimum fresh air supply of from 10 to 15 c.f.m., instead of 20 to 30 c.f.m. as was common in 1930, for class, study, and recitation rooms. Eight of these 22 States require that the total air supply (outside plus recirculated air) must not be less than 30 c.f.m. per pupil, a standard that Yaglou said could not be met without the use of fans.

New York regulations for heating and ventilation, as amended in 1947, are the most rational and up to date in his estimation.

New York State requires that heating systems be designed and guaranteed to maintain certain specified temperatures in different sections of the school, with a vertical gradient not exceeding 5° F. from the floor to the 60-in. level. The ventilating system must provide a minimum air change of 10 c.f.m. per pupil to remove odors without producing drafts. The air movement in zones of occupancy must not exceed 25 f.p.m.

For effective thermal operation in mild weather a design factor of 15 c.f.m. is recommended. When extensive use of a school building is anticipated in hot weather, the department may require installation of an air conditioning system or the use of electric fans. Independent ventilation systems are required where toxic substances or strong odors are produced. Authority to approve places and specifications for school buildings is vested in the commissioner of education.

Urges More Rigid Control Of School Lunchrooms

School lunchrooms should be included in the food sanitation programs of the city and county health departments in the opinion of John H. McCutchen, M.P.H., director of the bureau of food and drugs, Division of Health, Jefferson City, Mo.

Further, school lunchrooms should be issued permits and grades as any other eating or drinking establishment in the community, and violations of regulations should be dealt with in a similar manner, he said.

In Missouri, McCutchen said, the department of education reviews all school building plans before State approval is given for State aid. This does not cover all the school lunchrooms being built throughout the State, but a large percentage of plans for new lunchroom facilities come in for review in this way. McCutchen stated that in many instances defects in plans have been corrected.

One of the major problems, McCutchen stated, to be encountered is the lack of adequate space for the preparation and serving of food. Space for separate facilities has not been allocated in many existing schools. The usual result is that space now used for storage and other purposes is converted into food preparation rooms since overcrowded classrooms have taken up all other available space.

The first of two resulting problems is inadequate hot water facilities. Hot water heaters cannot be made to produce the desired hot water for rinsing dishes by simply turning up the thermostat or attaching a booster heater, McCutchen emphasized.

Every hot water heater is designed to operate at a definite B.t.u. input and the upper limit of the thermostat should not be exceeded, he explained. The recovery rate of such hot water heaters should be determined mathematically beforehand. School authorities should try to determine how much hot water will be needed and how much space is available before proceeding with construction plans.

Cites Defects

Inadequate illumination is the second problem in McCutchen's opinion. He said it has been found that the degree of sanitation is directly proportionate to the amount of properly distributed light. Without adequate light, the lunchroom employees cannot tell when the equipment and facilities need cleaning or whether they are actually clean after being washed.

McCutchen said that these are some of the other defects in lunchroom construction plans: no specifications for kitchen equipment; grease-resistant asphalt tile not specified; inadequate space for kitchen and storeroom; no walk-in cooler, insufficient refrigeration capacity; soiled-dish window too small; no clean-dish tables; dining area too small; lack of adequate hand-washing facilities; improper location of toilet facilities; failure to provide a sneeze shield for cafeteria lines.

McCutcheon contended that the local health department and the school administrators are responsible for providing adequate space for the kitchen and dining areas, proper equipment, and proper construction. To assure proper sanitation, school administrators should consult with the health department about building plans before commencing construction.

To assist the school officials and the employees of school lunch programs, Missouri conducts food handling courses. Junior and senior classes of the high school are also invited to participate in this training course. When the students learn the proper sanitation procedures, McCutchen said, they demand them and are quick to criticize improper techniques in public establishments. Many also tell their mothers about the proper methods of handling food, cleaning, and sanitizing dishes and equipment.

School Dental Results Questioned by ADA

School health programs that fail to bring about improved dental health should be reviewed periodically according to Perry J. Sandell, M.Ed., director of the bureau of dental health education, American Dental Association.

Sandell reported that in 1955 the bureau of economic research and statistics of the association sought to determine the number of cities having school dental programs and the characteristics of these programs. Completed questionnaires were received from 2,228 cities (63 percent) with populations exceeding 2,500.

Dental Personnel

Ninety-five schools (7.1 percent) had the services of a full-time dentist. In 83 percent of the cities, dentists worked part time; of these, 43 percent donated their services.

Full-time dental hygienists were employed in 22.1 percent of the reporting schools. Dental hygienists, employed on a part-time basis, were reported by 11.7 percent. Of these, about one-fourth donated their services; the others were paid by various organizations.

Services of Dentists

Mouth examination was the most frequent service. It was included in the reports of 74.1 percent of the responding cities. Annual examinations for all students were reported by 25 percent, annual examinations for certain grades only were held in 38 percent, and examinations at irregular intervals were made in 10 percent. Only 21 percent of the cities referred students to their own dentists for complete examination.

Some dental treatment was provided in 60 percent of the school systems. Fillings and extractions were provided upon request in 10 percent of the cities. In 8 percent of the cities, topical fluoride treatments were provided for certain age groups.

Services of Hygienists

Dental hygienists made annual dental inspections of all children in 13 percent of the cities, whereas in 16 percent they made annual inspections in certain grades only. In half of these schools, children were referred to their dentists for examination. Prophylaxis was provided by the dental hygienists in 18 percent of the reporting cities and the median amount of time spent was 40 percent. In 20 percent of the cities, hygienists gave topical fluoride applications and devoted 40 percent of their time to such treatment.

Educational Activities

In 27.1 percent of the cities, dentists served as consultants to teachers in their health instruction programs; in 14 percent they appeared before classes to speak on care of the teeth.

Hygienists served as consultants and aided in inservice training of teachers in 18 percent of the cities. In 20 percent, they taught dental health in the classroom, part time. Followup visits to the home were made in 18 percent of the cities.

General Observations

Unless dental inspection succeeds in determining dental health status and in motivating the child and parents toward better dental care, Sandell stated, the value of inspection is doubtful. He said reports show that dental care is lacking for many children, which indicates that dental examination alone does not guarantee dental health.

Sandell urged that procedures used in developing an inspection program and the functions of specialized personnel be analyzed carefully so that the educational potentialities can best be utilized.

Dental Health Education

Sandell commented on various approaches to dental health education, with reference to a survey of opinions and experiences of dental directors. In one instance, a director promoted a graded course of study in dental health and a parent education program designed to stimulate interest in fluoridation. Still another suggested an X-ray survey program, comparable to that of the tuberculosis survey, with an educational program to precede and to follow the survey, as well as a followup program to bring pupils in for treatment. Some schools have begun inservice training programs for teachers. Others reported success in programs using science classes to conduct Snyder tests for dental caries susceptibility.

The parent-teacher association in one State has recognized the importance of education of the parents in dental health by establishing a study course in dental health for all local units of the association. These were developed with the assistance of the health department and the dental society.

Schools Can Aid In Fight Against Poison Mishaps

An organized attack by educational institutions on the problem of accidental poisonings has been proposed by Fred V. Hein, Ph.D., consultant in health and fitness, bureau of health education of the American Medical Association.

Schools should contribute, said Hein, to the prevention of such accidents through the following: (*a*) use of existing adult education channels, including home-school organizations such as parent-teacher associations; (*b*) emphasis on preventive procedures throughout the school careers of children and youth; (*c*) stressing such measures in high school and college courses relating to the education of prospective parents.

Institutes, classes, study groups, meetings, forums, and conferences for adults on many subjects might appropriately include information on poisoning hazards and prevention, he said. The same applies to educational radio and television, newspaper articles, periodicals, and bulletins to homes.

More than 30 million children alerted in school to poisoning dangers might function as salesmen for safety, Hein stated. In the lower grades such training could be given to children in the form of simple "do and don't" instruction integrated with regular activities of the school day. As children gain understanding they might be taught the "how and why" of safe practices with regard to the handling of potentially poisonous substances. Hein pointed to the many opportunities for teaching of accidental poisoning prevention along with other subject areas in the secondary school curriculum, such as classes in health, industrial and fine arts, science, and homemaking.

Prospective parents have often been neglected in educational efforts designed to enlist the cooperation of families. Yet many secondary school and college students will become parents in the near future. When they have actually become parents, only a portion of them can be reached, and then only indirectly, Hein stated, concluding that it was especially important that these older students be made aware of accidental poisoning hazards and of opportunities for taking adequate safety measures.

Dental Care and Services . . .

Long-Term Dental Health Via 10 Short-Term Goals

Too few parents consider the condition of the child's teeth until he is ready to enter school and then usually as a result of the dental educational feature of the summer roundup program, remarked William A. Jordan, D.D.S., M.P.H., chief, section of dental health, Minnesota Department of Health, Minneapolis.

Overcoming this indifference in ourselves as individuals and as parents, stimulating the leadership of the dental profession in their own segment of health education, and sparking the interest of legislatures in the reasons for good dental health are the major foci of dental health education, Jordan continued.

The family dentist misses many opportunities to contribute to dental education, Jordan believes. When he says to his patient, "Sugar causes tooth decay," that is the occasion to describe how decay is created through the process of oral bacteria feeding on sugars in the mouth, producing an acid which attacks the tooth enamel. It is an opportunity for him to tell how fluorides ingested or topically applied can create resistant tooth enamel.

Too often, particularly with fluoridation programs, the opposition has done a better job than the proponents, Jordan observed.

Short-Term Objectives

Jordan listed short-term objectives which he feels are within the realm of achievement, and added that of the methods for attaining them the most needed are undergraduate public health courses established in all schools of dentistry; courses in dental health required for public health nurses; and improvements in health education material presented to undergraduate teachers. His list of objectives included the following:

1. To teach every individual the importance of keeping his mouth healthy throughout his lifetime.

2. To understand the important relationship of dental health to general health, outward appearance, and even mental reactions.

3. To relate the services available from all groups and agencies in the promotion of a better dental program.

4. To encourage the observance of proper dental health practices including personal care, professional care, proper diet, and oral habits.

5. To encourage better patient-dentist relationships.

6. To present how the dental health activities may be correlated with the public health program.

7. To educate the public to the value of adequate dental care for children and youths and to develop the resources that make such programs possible.

8. To continue to promote better education programs in colleges and universities for prospective teachers of health education.

9. To encourage and emphasize the need of public health courses for the undergraduate dental students so they might be better prepared to participate in their community's dental program.

10. To interpret the dental program to the practicing dentists and stimulate their interest and responsibility.

Can Extend Dental Services With Auxiliary Personnel

Because of the shortage of dentists, a realistic staffing plan for dental public health programs should depend on auxiliary personnel to extend services, according to Norman F. Gerrie, D.D.S., M.P.H., acting chief dental officer of the Public Health Service.

Many dental health program functions can be performed by available auxiliary personnel such as dental hygienists, health educators, and public health administrators, he asserted.

The demands on the public health dentist have increased with the growth of technical and administrative knowledge in the field so that the dental public health administrator is pressed to keep up with his work, Gerrie declared.

It is his responsibility to plan the dental program, and to integrate and coordinate it with the other activities of the health department, he said. He should be designating and defining dental needs of the community, selecting objectives and assigning priorities, working with dental organizations of the area, and making sure that the quality of the work in the dental program earns public respect and appreciation. In this task few dental administrators can hope to have public health dentists as assistants, he said.

This, he explained, is because: (*a*) the national supply of dentists is known to be inadequate; (*b*) since dental public health has achieved specialty status, expensive training after regular training is required; (*c*) dental schools orient their students for private practice, which is much more lucrative than public health dentistry; and (*d*) the demand for public health dentists has risen steadily since 1918.

Suggested Criteria

In the past, auxiliary personnel were selected because they were more readily available and less expensive than dentists, were already in the field, or were trained in fields which enabled them to bring to the dental program skills of potential value. Such personnel were employed with varying degrees of success, he commented.

Useful criteria for choosing auxiliary dental personnel, Gerrie suggested, are that the individuals considered should: (*a*) have adequate basic preparation for the job; (*b*) have public health training, either a year in a public health school or integrated training during the basic preparation; (*c*) be available in adequate numbers or such availability promised; and (*d*) be acceptable to the public in their job capacities.

These criteria, he declared, point to health educators, dental hygienists, and public health administrators as acceptable auxiliary personnel.

The Three Groups

Health educators bring skills particularly valuable in dental education programs and in the use of printed materials, in working with community organizations, in conducting workshops and inservice training programs, he said.

The adequately trained dental hygienist with a degree is more useful to the program than is the 2-year hygienist trained primarily in clinical operations, Gerrie noted. Hygienists have been employed for lectures to students, teachers, and parents and could conduct surveys for the dental administrator. They can give classes in dental health for teachers and nurses. In community planning, the hygienist could coordinate action with the health educator; each may act as a resource person for the other. The hygienist can double for the dentist except in activities involving technical interpretation.

The public health administrator brings to his job knowledge of public health philosophy, techniques, methods, and related elements of all public health disciplines. He can contribute to planning and evaluation. He could develop procedures for surveys and prepare preliminary drafts for the required administrative reports.

Research Needed

Auxiliary workers with other skills may be used as new needs arise. Research is required to identify such skills and a knowledge on the best methods of training personnel. A willingness to try to discover the best uses of auxiliaries may lead to a significant easing of the shortage of manpower in the field, Gerrie asserted.

Long-Term Dental Survey Advantages Reported

A long-term study of dental caries incidence and periodontal disease in Prince Georges and Montgomery Counties, Md., has provided findings which could not be obtained from a cross-section survey, according to A. L. Russell, D.D.S., M.P.H., of the National Institute of Dental Research, National Institutes of Health, Public Health Service, Bethesda, Md.

The long-term procedure yields information which can be elicited by no other techniques, he said. "A principal advantage of the method is that any observation can be analyzed as a mean change and hence is amenable to any desired dissection by statistical analysis. The uncertainties of dealing blindly with absolute values are avoided."

Some of the types of data which are accessible only through long-term examinations were illustrated in the findings of the chronic oral disease investigation in Maryland. These types were: the direct estimation of incidence, increment over a given time span, with known error components; the relationship between two effects which are observed rather than assumed to coexist through the period of study; and the retrospective study of persons in whom a given effect appears, compared with similar persons in whom the effect did not appear, based directly on data of record.

The Maryland Study

The study began in 1951 when the National Institute of Dental Research was invited to participate with the Southern District Dental Society of Maryland in a prefluoridation survey of dental caries. A long-term study was conducted in which 5,000 to 6,000 elementary and junior high school students were examined during the same calendar week each year, Russell said.

A method was devised for scoring periodontal disease from zero to 8.0 with the higher scores indicating more severe damage. The mean numbers of decayed, missing, or filled permanent teeth permitted scoring over a continuous scale for dental caries.

Comparison of caries activity and gingival status for the observation period revealed a tendency toward

increasing caries activity with increasing gingival inflammation for children with only simple gingivitis. There was an unusually large number of children with clean mouths in 1955 who had shown simple gingivitis in 1954. About 8 out of 9 with such reversals exhibited objective evidence of professional care during the study period. Such care had been received by only about 2 children out of three for the entire group.

Children receiving care during the year or showing no need for care at the beginning and end of that period showed a very low prevalence of gingivitis, according to Russell. Definitely more gingivitis was seen in a small group which received only emergency treatment. The remaining children who did not receive care were grouped into three categories roughly representing the degree of neglect of care.

In this grouping, children whose care needs had been met at the outset of the period, but who had not yet received treatment for lesions appearing during the year, showed the least gingivitis. Intermediate were those in whom generally small carious lesions, present at the beginning of the year, received no treatment during the 12 months. Children who exhibited gross neglect had the most gingivitis.

Russell pointed out that the long-term survey is not the method of choice in studies where the data required may be obtained directly through a single cross-section survey.

Epidemiology . . .

Nonmedical Interviewers In Morbidity Surveys

Techniques are needed by which morbidity surveys of the general population may be used by the epidemiologist to study associations in noncommunicable disease which are worthy of further investigation, stated Theodore Rubin, Ph.D., Joseph Rosenbaum, A.B., and Sidney Cobb, M.D., M.P.H.

Dr. Rubin is research associate in epidemiology and Dr. Cobb is associate professor of epidemiology, University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pa. Mr. Rosenbaum was a research associate in epidemiology at the University but is now with the Rand Corporation in Santa Monica, Calif.

Clinical impressions are usually the basis for hypotheses about diseases, but clinical impressions are obtained from a biased population, and a way is needed to check these impressions in representative population studies, Rubin and his coworkers said.

The use of the nonmedical interviewer as an alternative to mass screening techniques or clinical examinations is suggested as having the advantages of a high response rate, low cost, and an available staff to compensate somewhat for the lack of diagnostic accuracy.

The substitution of "virtual" classifications of disease obtained by nonmedical interviewers for the "true" classifications obtained by clinical examination by physicians presents certain limitations also. Rubin and his co-workers discussed these limitations and offered a formula for selecting a sample population and a set of questions that might be used, in lieu of clinical methods, to detect associations with rheumatoid arthritis.

Further Study Warranted

Despite the limitations imposed by the substitution of virtual for true classifications of disease, Rubin and his co-workers believe that the method warrants further study from the standpoints of both theory and practical application. Few physicians are willing to take part in morbidity studies, they said, and those who are available usually require a period of orientation to population studies, whereas interviewers can be found in any community and can be trained by the study staff. Use of interviewers for these studies is much less costly than the use of physicians, and many more persons will reply to an interviewer's questions than will undergo physical examination by a physician, Rubin and his co-workers said. It is their feeling that the most important gain from this technique is the increased response rate.

Insured Groups Valuable In Genetic Studies

Enrollees of prepaid medical care plans provide an excellent medium for research into genetic and epidemiological problems of clinical medicine, according to Louis E. Schaefer, M.D., and David Adlersberg, M.D.

The contributions that such programs could make to genetic and epidemiological research "may eventually represent, quite apart from the socioeconomic value of prepaid comprehensive care on a group basis, significant and valid reasons for the existence of such planning," they said.

Dr. Schaefer is associate medical director, Central Manhattan Medical Group, and research assistant in medicine, Mt. Sinai Hospital, and Dr. Adlersberg is associate attending physician for metabolic diseases, Mt. Sinai Hospital, New York, N. Y.

Groups for the study of clinical genetics in man are much in demand, and population material must be readily available if genetic problems are to be worked out directly, they said. By using enrollees of prepaid medical care plans, entire families can be examined, pedigrees

can be established, and twins can be studied, they stated.

Pedigree Method

Medical care plans, such as the Health Insurance Plan of Greater New York, enroll and provide medical care for families—parents and all children up to 18 years of age—as a unit, Schaefer and Adlersberg stated. In groups such as this, "an entire segment of a virtually unselected population can be investigated for the occurrence of an inherited trait," and studies can be repeated in a relatively stable population, they pointed out.

Furthermore, laboratory and clinical studies can be made within the framework of the subscriber's ordinary relationship with his physicians, and complete records of the entire family are available in the offices of the medical group. An added advantage has been the cooperativeness of relatives of the families in the study group, who often must be questioned and examined to complete the research, they stated.

Staten Island Studies

Schaefer and Adlersberg reported that studies of the genetic mechanisms in idiopathic cholesteremia are being made in families enrolled in the Staten Island medical group of HIP. Previous studies of this condition had been carried out in a hospital, but it was felt that investigations of a metabolic disorder of this type, which occurs in individuals who appear to be healthy otherwise, should be made in family groups representative of the general population.

Epidemiological studies of cholesterol levels have been conducted simultaneously with the genetic studies, they said. Findings indicate that the rapid increase in average cholesterol levels in men, beginning at age 20, produce changes which may result in the high frequency of coronary disease in the earlier decades of life; and that the same phenomenon begins 13 years later in women and continues 12 years longer than it does in men.

A longitudinal study of men and women whose cholesterol levels have been carefully observed through the critical decades will be required to prove this hypothesis, they stated, and the families in the HIP-insured group will be particularly suitable for such a study.

In conclusion, Schaefer and Adlersberg said that the Staten Island studies demonstrate the integration of genetic and epidemiological research with the clinical practice of medicine, using techniques employed by the internist in his daily practice, with no exploitation of or inconvenience to the patient, and that these studies will be continued and broadened.

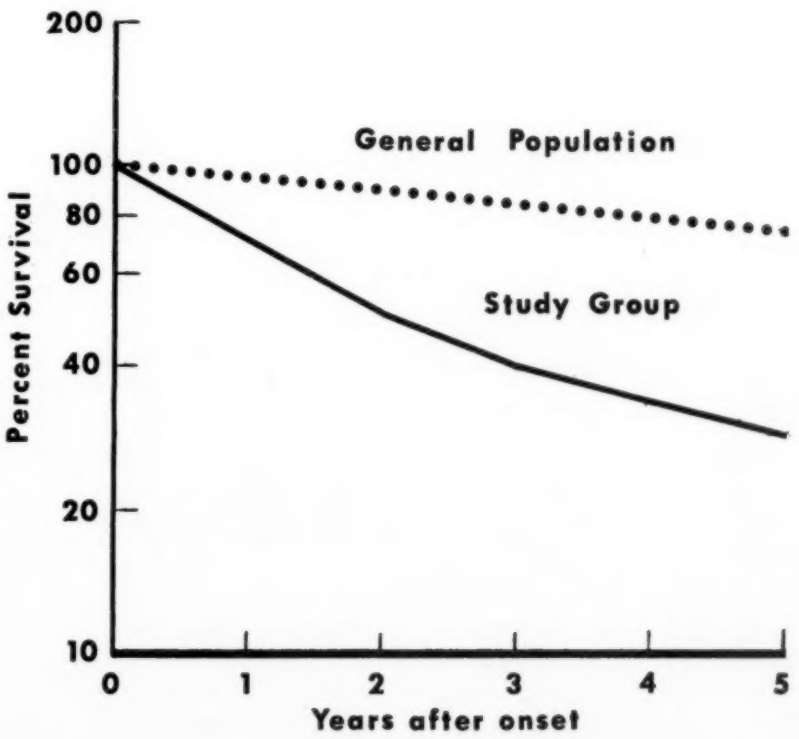
Study Accents Value Of Early Diagnosis

Recent New York State studies confirm that a great gain in survivorship of cancer patients will probably result if cancer cases are diagnosed in the early, localized stage.

This opinion was expressed by Arthur S. Kraus, M.S., associate biostatistician, Morton L. Levin, M.D., assistant commissioner for medical services, Rita E. Cashman, M.S., biostatistician, and Paul R. Gerhardt, M.D., director of the bureau of cancer control, New York State Department of Health, Albany, N. Y. They reported results of a study of 2,065 cases of cancer with known or reported onset during 1940–42, found in 6 counties of northern New York State during the period 1940–47.

The 5-year survival rate for the cases in the study was 27.7 percent, Kraus and his associates reported. Survivorship was determined for single years up to 5 years after onset. Patients were classified as dead in 1 of the first 5 years following the onset of cancer, alive 5 years after onset, or lost to observation while alive in one of the first 5 years after onset. The probability of dying from cancer during a given year decreased

Survival rates of study group and general population.



in each successive year, from an annual rate of about 30 percent in the first year after onset to about 16 percent in the fifth year.

Site and Age

Survival rates for cancer of the skin were higher than for cancer of any other site, Kraus and his coworkers said. The major sexual sites, followed by the major nonsexual sites, had the next highest rates of survival. Leukemia had the lowest survivorship rates of all major sites. The rate of survivorship for the six internal sites common to both sexes was higher for males than for females. The adjusted survival rates showed some difference in time trend for different sites.

The survivorship of all cancer cases of each sex was higher in the under-55 age group than in the older group, the investigators reported. This relationship was statistically significant for uterine cervix cancer in women under 35 and for ovarian cancer in women under 45, they said. While part of this relationship appeared to be explained by the tendency of younger cases to be diagnosed at an earlier stage of disease than older cases, factors other than stage of disease at diagnosis appear to be involved. The study also showed that inclusion of a higher proportion of false positive cases among the younger group did not account for the higher survival rate of the younger group.

Stage at Diagnosis

Persons of both sexes whose cancers were diagnosed in the early, localized stage had a higher survival rate than persons diagnosed in other and unstated stages. This finding was most striking for the sites with the lowest survival rates—ovary, bladder, large intestine, and rectum. The higher survivorship rate for patients with cancers diagnosed in the early, localized stage was not due to the inclusion of a higher proportion of false positives among this group.

Kraus and his co-workers concluded that the results of this study represent the minimum survivorship for the diagnosed cancer population of the six counties studied. They believe that, except for the factor of chance fluctuation, these results are approximately representative of the situation for the period studied in the entire State of New York, exclusive of New York City.

The Virus Diseases . . .

Complement Fixation Tests Need Standard Procedure

An evaluation of the various techniques used in the virus complement fixation test and the development of a standard procedure acceptable to all laboratories is needed, according to Alan Bernstein, Ph.D., acting in charge of the Reference Diagnostic Unit of the Communicable Disease Center, Public Health Service, Montgomery, Ala.

There are probably as many techniques as there are virus diagnostic laboratories, he said. This situation does not permit laboratories to handle maximum loads or compare results among themselves.

Five Variables

To illustrate his thesis, Bernstein referred to the standardizations of antigen, complement, and hemolysin and the preparation of constant concentrations of sheep red-blood cells suitable for this purpose as variable phases of the test. He designated the serum tested another variable.

The standardization of hemolysin and complement may be accomplished by checkerboard titration, and optimal dilutions obtained. Another procedure is the titration of hemolysin in the presence of a constant dilution of complement and subsequent titration of the complement in the presence of two units of hemolysin, he said.

"Several laboratories have streamlined the complement fixation test to accommodate the testing of large numbers of serums with several antigens by using a single dilution of complement for the entire battery of antigens. In this procedure, the amount of complement used for each antigen ranges from 1.5 to 2.0 units for each antigen instead of 2.0 exact units," he said, warning that such a system is hazardous unless controlled.

He recommended the restandardization of each lot of commercially procured antigen. Antigens may be titrated by the checkerboard or straight line pattern. In the latter case, serial dilutions of antigens are tested with a single dilution of homologous immune serum. If the titer of the reference serum is of too low a value, the antigen may not detect low levels of antibodies in a patient's serum.

The force maintained in centrifugation of the sheep red-blood cells may influence the sensitivity of the test. Bernstein advocated that directions for the application of centrifugal force in preparing cell suspensions be given in terms of gravitational units rather than the more commonly supplied revolutions per minute.

Also, he called attention to a process whereby centrifugation of cell suspensions for maximum cellular packing is unnecessary. With reference to the true hematocrit value for a portion of a washed-cell suspension, determined with a Bourke-Enstine hematocrit tube, and the volume of the stock suspension, a dilution may be prepared for the desired concentration. Suspensions

prepared in this way may be more accurately reproduced than others.

Incubation of specimens for only 1 or 2 hours at 37° C. provides for a less sensitive but quicker and more specific test than overnight incubation in the cold. Although the former process may be resorted to in an emergency test, Bernstein advised that, for specimens thus found negative, the test be repeated with an overnight incubation period.

Special Problems

The supply of positive serum for control purposes is more limited than that of any other necessary reagent, he said. Human serum is more desirable than animal immune serum, but even commercial stocks of animal serum are small. However, Bernstein held that through cooperation among virus diagnostic laboratories in different areas where different virus diseases are prevalent sufficient quantities of all types of human serum might be made available to all laboratories at little expense. For example, southern State laboratories could exchange typhus serum for lymphocytic choriomeningitis serums with the laboratories in the Middle Atlantic and New England States.

Concerning the interpretation of test results, he listed three possible complicating factors: haphazard collection of serum specimens; lack of ample clinical data on patients; and the occurrence of nonspecific reactions.

"Ideally, the first serum specimen should be obtained within the first few days after clinical onset and a convalescent specimen obtained 2 to 4 weeks later," he said. "The specimens should be submitted with a proper history that indicates date of onset and collection of specimens, a summary of the clinical symptoms, and the physician's provisional diagnosis. Information concerning vaccinations, recent travel, and intimate contact with animals or individuals with similar symptoms is as important as the clinical symptoms in aiding in the interpretations of results."

Problems of nonspecific reactions arise more frequently with antigens prepared from embryonated eggs than those prepared from mouse or guinea pig tissues. If necessary, he said, serums may be treated with normal embryonated egg membranes to remove a nonspecific antibody, or absorbed with packed sheep cell suspension if the antibody is of the heterophile type.

While the serums of some patients, especially those with positive syphilis serologies, are inherently anticomplementary, bacterial or chemical contamination of a serum may also cause anticomplementary reactions. Reactions of this nature may occasionally be attributed to excess amounts of oxalate, citrate, heparin, or merthiolate. Improper storage and handling of the antigens may result in anticomplementary reactions or deterioration of the activity.

"It is important, therefore," he insisted, "that every test include not only antigen and serum anticomplementary controls, but also a positive serum control, so that the potency of the antigen be known." Inclusion of normal antigen controls will indicate the presence of nonspecific reactions.

Bernstein mentioned several problems involving specific viruses or groups of agents. A history of recent vaccination, he said, may complicate diagnosis of influenza by complement fixation test and may be a problem in future serologic diagnoses of poliomyelitis. Again, the extensive use of broad spectrum antibiotics has resulted in a special problem in the diagnosis of infections by the rickettsiae and psittacosis-lymphogranuloma venereum group of viruses.

Lead Fight on Viruses, Health Officers Told

With communicable diseases fading as the major public health concern, the health officer should lead in the fight against the "hard core" of communicable viral infections, stated John E. Gordon, M.D., professor of preventive medicine and epidemiology, Harvard University School of Public Health.

In addition to applying the principles of communicable disease control and acquiring familiarity with characteristics of already known viruses, the health officer should contribute to new knowledge through field studies of virus diseases, he said.

Virus diseases include the most common, most dangerous, most curious, most obscure, and the main part of the newly discovered diseases, but, "to complicate matters, as virologists have expressed it, there are newly discovered viruses seeking a disease as well as the more orthodox situation of a disease looking for its viral agent," Gordon said.

As the practice of preventive medicine enlarges and as the composition of populations changes, neoplastic and degenerative diseases, mental disorders, and traumatic injury are properly incorporated into public health programs. Gains in the control of communicable diseases often permit more effort in these other fields. But, he said, judged by disabilities, deaths, and their contribution toward other conditions, the communicable diseases remain the backlog of the public health program.

Local Health Officers

The local health officer has the main responsibility for communicable disease control. For virus diseases, as with all others, the measures put into practice depend upon information gained through practical field study of the particular situation, Gordon declared. Local health officers and physicians must known which viruses can be diagnosed in the laboratory and which cannot. They must also know the kind of material to collect for the laboratory and how to collect and forward such materials.

State Health Officers

The State health officer should help by offering consultation and

by providing diagnostic laboratory facilities and skilled workers. As laboratories are costly and qualified workers are few, facilities are ordinarily provided by the State, or by arrangement with 1 of the 30 cooperating laboratories of the Public Health Service, he noted.

The State health officer should see that all physicians and local health officers have all the necessary information on virus diseases, Gordon declared. The preferred means for providing this information are short courses or conferences throughout the State, with distribution of an outline of the essential material. Alternatively, the outline and a letter may be used.

Practical Needs

Reporting of epidemics as contrasted with routine individual case reports is especially important for viral infections of irregular occurrence and for ill-defined disease of possible viral origin. Such reporting, he said, should give the number of cases, within what time, approximate population involved, and apparent mode of spread.

Existing knowledge may well be applied toward a more reasonable practice of isolation in respect to a number of the more common virus diseases, he commended. The evaluation of control procedures requires more emphasis than commonly accorded that important feature. Ipsen's procedure for bacterial diseases, whereby serologic epidemiology was a measure of extent of use and past performance of an immunizing agent and in direction of future effort, has possibilities for viral immunizing agents, Gordon said.

Army Data on Viruses

Data on the communicable diseases in World War II, just becoming available, show that 23.3 percent of reported cases of specific infectious and parasitic diseases were caused by viruses, Gordon said. If viral, presumably viral, and common respiratory diseases are placed in relation to all communicable disease, the proportion of viral disease to the whole approximates two-thirds, he declared.

The military services have the most complete data on morbidity and permanent disability, he asserted. Communicable disease accounted for about half of all disease in Army troops during the war. Deaths from disease were only 5.1 percent of the total, 75.2 percent were battle casualties and 19.7 percent were nonbattle injuries. Disabilities, however, were 85 percent due to disease, the remaining 15 percent distributed between battle and nonbattle categories. Man-days lost were 285,918,000 from disease, 59,863,000 from injuries, and 72,000,000 from battle casualties, he reported.

The Army data are informative because they present evaluation of the communicable diseases in terms of death, defect, and disability. Judgment is too often on the sole criterion of death, Gordon asserted.

These Army data, representing American experience in most parts of the world, demonstrate that the communicable diseases are not outmoded, he said. Half of the world population lives in countries where communicable diseases rank first among causes of death. The infectious and parasitic diseases were 2½ times as frequent among American troops in the China-Burma-India theater as in troops in the United States. Control measures evaluated on experience in the United States are not always so effective in other parts of the world, even when applied to an American population by American physicians, he commented.

Specific control measures for smallpox, infectious hepatitis, poliomyelitis, and rabies were discussed by Gordon. Rubella and chickenpox were mentioned as virus dseases for which there is no practical control under present methods. The control of infectious mononucleosis, keratoconjunctivitis, and a number of other infections of presumed viral origin is within the province of research rather than practice, he said.

Find New Virus Group In Healthy Children

The new types of enteric viruses discovered in 1953 in a study of healthy children in Cincinnati, Ohio, have since been found in even larger numbers in healthy Mexican children, according to a report by Manuel Ramos-Alvarez, M.D., and Albert B. Sabin, M.D., respectively, research associate and professor of research pediatrics, Children's Hospital Research Foundation, University of Cincinnati College of Medicine. The existence of these new viruses was revealed by the use of monkey kidney tissue cultures.

Among 1,491 children aged 1 to 4 years in Mexico City, nonpoliomyelitis viruses were found in 15.6 percent; among 280 children of the same ages in Veracruz, they were found in 10.0 percent, they specified. The comparative figure for the Cincinnati children was 5.2 percent. All the children studied were from low economic groups.

A total of 261 nonpoliomyelitis virus strains, they reported, were recovered from the Mexican children, about 65 percent of which still remain unclassified. Of 26 nonpoliomyelitis strains recovered from the Cincinnati children, 25 were found to belong to five distinct antigenic types which differ from previously known viruses, and 1 proved to be a Coxsackie B4 virus. Four of the five Cincinnati prototype viruses (2, 3, 4, and 5) were found in the Mexico City children, and one (type 5), in the Veracruz children.

Role in Disease

The significance of these new viruses in the etiology of human disease is still a problem for research, the scientists pointed out. However, they declared, it is clear that they are not the viral counterpart of the normal bacterial flora of the human enteric tract because they are found more frequently during the early years of life and, at least in Cincinnati, are found only rarely in children over 10 years of age. (Of 837

Cincinnati children 10 to 17 years old, the viruses were found in only 0.2 percent.)

In preliminary serologic surveys among Cincinnatians, neutralizing antibodies for the Cincinnati viruses were found much more frequently among those aged 20 to 30 years than among those aged 1 to 5 years, Ramos-Alvarez and Sabin reported. However, only 3 percent of the older group had antibodies against all 5 types.

The following observations, they said, suggest that at least some of the new viruses may prove to be related to infections of both the respiratory and enteric tracts: A virus associated with an epidemic of rhinitis in chimpanzees and another associated with a family outbreak of an acute "steatorrheic" enteritis were found to be antigenically related to, though not identical with, the Cincinnati type 4 virus.

Another clue for further investigation is the finding by J. L. Melnick and his associates that some of the "orphan" viruses recovered from stools of patients with a diagnosis of either nonparalytic poliomyelitis or the aseptic meningitis syndrome were identical with the Cincinnati types 1 and 3 viruses.

Characteristics of the Viruses

Ramos-Alvarez and Sabin gave the following additional information about the five Cincinnati prototype viruses:

Types 1, 2, 3, and 5 produce in cynomolgus monkey kidney tissue cultures cytopathogenic effects which are indistinguishable from those exhibited by the poliomyelitis viruses. Type 4 produces a cytopathogenic effect distinct from the effects produced by the others and from those produced by the poliomyelitis, herpes, and mumps viruses: A clumpy degeneration of the cells appears after an incubation period of 2 to 10 days. Only type 4 virus was capable of producing a cytopathogenic effect in cultures of kidneys derived from *Cebus capucinus* monkeys.

According to Dr. Irving Gordon and Dr. William Jordan, the five Cincinnati viruses can be propagated in HeLa cells, although the yield of virus is low.

Dr. Robert Huebner has reported that these viruses do not belong to the APC group, and Dr. Robert N. Hull states that they are distinct from the cytopathogenic agents that he recovered from normal monkeys.

Human gamma globulin was found to contain antibody for all but type 2, and antibodies for type 2 have been demonstrated in individual human serums.

The Cincinnati viruses are not pathogenic for either suckling or adult mice by the intracerebral or spinal routes. They are not pathogenic for rabbits by the intracutaneous, intramuscular, or intravenous routes. Types 1, 2, and 3 are not pathogenic for cynomolgus monkeys by the spinal route, but antibody develops as a result of the inoculation.

Virus Induced Cancers Tied to Virus Theory

No cancer has ever been induced in an animal or a medium known for certain to be free of viruses, asserted Francisco Duran-Reynals, M.D., in an exposition of the so-called virus theory of cancer. Dr. Duran-Reynals is lecturer and research associate, departmnet of microbiology, Yale University School of Medicine.

Furthermore, he stated, a large number of cancers, especially in birds and mice, are induced by agents fulfilling all the requirements of viruses. Here the word "theory" with "virus" is unwarranted; it should be reserved for cancer in man and others of unknown etiology, he said.

The more we study viruses, the more we learn that they are present in tissues and culture media, often in an incomplete, noninfective state, he continued. He pointed out analogies between this situation and the "spontaneous" alterations or putrefaction of imperfectly sterilized media in Pasteur's time.

However, even if someday cancer is induced in animals in the proved absence of viruses, this will not change the fact that avian, murine, and other cancers are virus induced, he noted. It would mean that we have two types of cancer: infectious cancers and noninfectious cancers.

The virus theory, according to the speaker, holds that a cell invaded by certain viruses is induced to multiply at the same time that the viruses themselves multiply, an exogenous process. The only other view concerning the cause of cancer, the noninfectious view, contends that a sudden change leads to unrestricted cell multiplication even after withdrawal of the stimulus, an endogenous process.

The latter view is consistent with orthodox knowledge in histology, immunology, endocrinology, genetics, and other fields. However, since heredity, hormonal functions, and still other factors play a decisive part in making possible the effect of the virus, the knowledge accumulated in these fields is not only compatible with the virus theory also, but is indispensable for a full understanding of the virus realities, he stated.

The Age Factor

In discussing the mechanism of induction of cancer by viruses, Duran-Reynals noted that the age factor is present in the following three events:

Necrosis or stimulation of the infected cells. Observations on viruses of either cancers or proliferative processes show that cell destruction occurs in the immature host, whereas tumor formation takes place in the mature host.

Infection itself. Avian tumors—the Rous sarcoma, for example—are able to infect other species—ducks, for example—only when the latter are inoculated during immaturity.

Variability of the virus in the aging host. In the Rous sarcoma chicken-duck sequence, infection of the immature host is followed by a long period of latency or incubation;

then a tumor, always different from the original Rous sarcoma, develops. Usually, this cancer is no longer a chicken tumor but is a duck tumor, growing in older ducks as the original Rous sarcoma grows in chickens; that is, the virus has changed and adapted to the new species.

Duran-Reynal presented examples and data to support his statements.

Poliomyelitis . . .

Poliomyelitis Vaccine Production Advanced

A distinguished panel on poliomyelitis, in general session with the APHA, discussed the Salk vaccine with the assurance that the process of commercial production had been refined and that vaccine can now be produced without interruption.

Following an introductory statement by Jonas E. Salk, M.D., of the University of Pittsburgh School of Medicine, experience with the vaccine was discussed by other panel members: Robert D. Defries, M.D., University of Toronto; Lloyd Florio, M.D., University of Colorado; Thomas Francis, Jr., M.D., University of Michigan; Leonard A. Scheele, Surgeon General of the Public Health Service; and Hart E. Van Riper, M.D., National Foundation for Infantile Paralysis. Malcolm H. Merrill, M.D., director of public health for California, served as moderator.

The panel was assisted by David Bodian, M.D., Johns Hopkins University; Hugh L. Dwyer, M. D., Kansas City director of health; Roy F. Feemster M.D., director, division of communicable diseases, Massachusetts Department of Public Health; and Lawrence J. Peterson, Idaho director of health.

Dr. Salk's paper was supported by an Interim Report of the PHS Technical Committee on Poliomyelitis Vaccine. The committee includes Drs. Bodian, Francis, and Salk, Dr. Carl L. Larson, chief, PHS Division of Biologics Standards; Dr. Richard E. Shope, Rockefeller Institute for Medical Research; and Dr. Joseph E. Smadel, Walter Reed Army Medical Center; with Dr. James A. Shannon, director of the PHS National Institutes of Health, as chairman. Both Dr. Salk and the committee reported studies which discovered unsuspected hiding places for live virus during commercial production.

Production Changes

In essence, the vaccine is produced by inoculating tissue culture media with a virus strain, filtering, and then treating it with formaldehyde to render the virus capable only of provoking the production of antibodies. In the final stages of production, three single strain vaccines are combined in a "polyvalent" pool.

During laboratory production and in the trial period, there was no evidence of infectious amounts of virus in the vaccine. Under conditions of large-scale production, however, sediments were observed in virus suspension which had been allowed to stand more than 3 days between filtration and treatment. It was reasoned that the precipitates which formed protected virus from subsequent exposure to formaldehyde, with the result that infective quantities of live virus were detected by tests of batches of vaccine. It is now the practice to filter vaccine within 72 hours of the start of inactivation and during the final stages of the formaldehyde treatment.

At the same time, tests for the safety of vaccine have been strengthened by improving sampling procedures for tissue cultures and by increasing the sensitivity of the monkey tests. These measures, along with improvements in the processing, increase the assurances that vaccine which tests negative is, in fact, safe. With these elements of production under control, vaccine production is expected to proceed without delay, interruption, or frequent reprocessing.

Among questions put to the panel by the audience were the following:

Q. How long does protection last? *A.* Dr. Salk said children who received the two-shot-plus-booster inoculation still had antibodies reflecting the booster effect after 30 months. Until the program is older, the duration of effect will not be known.

Q. Does the route of inoculation matter? *A.* Shots under the skin or in the muscles are both effective; the timing, the amount, and the antigenicity of the inoculations determine the effects, Dr. Salk said.

Q. Does vaccination prevent subsequent nonparalytic poliomyelitis? *A.* The answer to this question is not definitely known. However, vaccination builds up enough resistance to infection to assure that an invasion will be unlikely to produce paralytic effects. There is also evidence that the vaccine may reduce the duration of infection and the amount of virus excreted.

Q. Will the Mahoney strain be superseded? *A.* No strain has been found that appears to confer superior protection against type 1 poliomyelitis. The interim report of the technical committee stated, "Vaccine properly made with the Mahoney strain provides an entirely safe immunizing agent."

Q. Did the vaccine contribute to the 1955 epidemic in Massachusetts? *A.* Dr. Feemster said absolutely not. The Massachusetts epidemic followed the classic pattern of radiation from a focal point. It did not appear in many areas in which vaccine was used. It was not a multiple-focus epidemic.

Q. Will the vaccine ever be 100-percent effective? *A.* We can have 100-percent effectiveness to the extent that lots of vaccine are consistent and resemble our "standard reference vaccine." We shall have vaccine approaching 100-percent effectiveness.

Questions which the panel did not have time to answer were referred by Dr. Merrill to Dr. Van Riper for collation. He promised to publish the answers to representative questions.

Polio Surveillance Unit Finds Vaccine Effective

An epidemiological evaluation of the safety and effectiveness of poliomyelitis vaccine was described by Alexander D. Langmuir, M.D., chief, Epidemiology Branch, Communicable Disease Center, Public Health Service, in collaboration with Neal Nathanson, M.D., and Wm. Jackson Hall, Ph.D., chief and statistician, respectively, of the Poliomyelitis Surveillance Unit. This evaluation was based on the surveillance activities of the Communicable Disease Center.

The surveillance of poliomyelitis is one of the several parts of the Poliomyelitis Program of the Public Health Service. The others include the licensing of production and clearance of vaccines and the administration of grant-in-aid funds and of the voluntary interstate program for vaccine distribution.

Since April 1955, the Poliomyelitis Surveillance Unit has acted as a clearinghouse for reports provided by the States and Territories, more than 40 participating laboratories, the National Foundation for Infantile Paralysis, and other sources of current data on poliomyelitis.

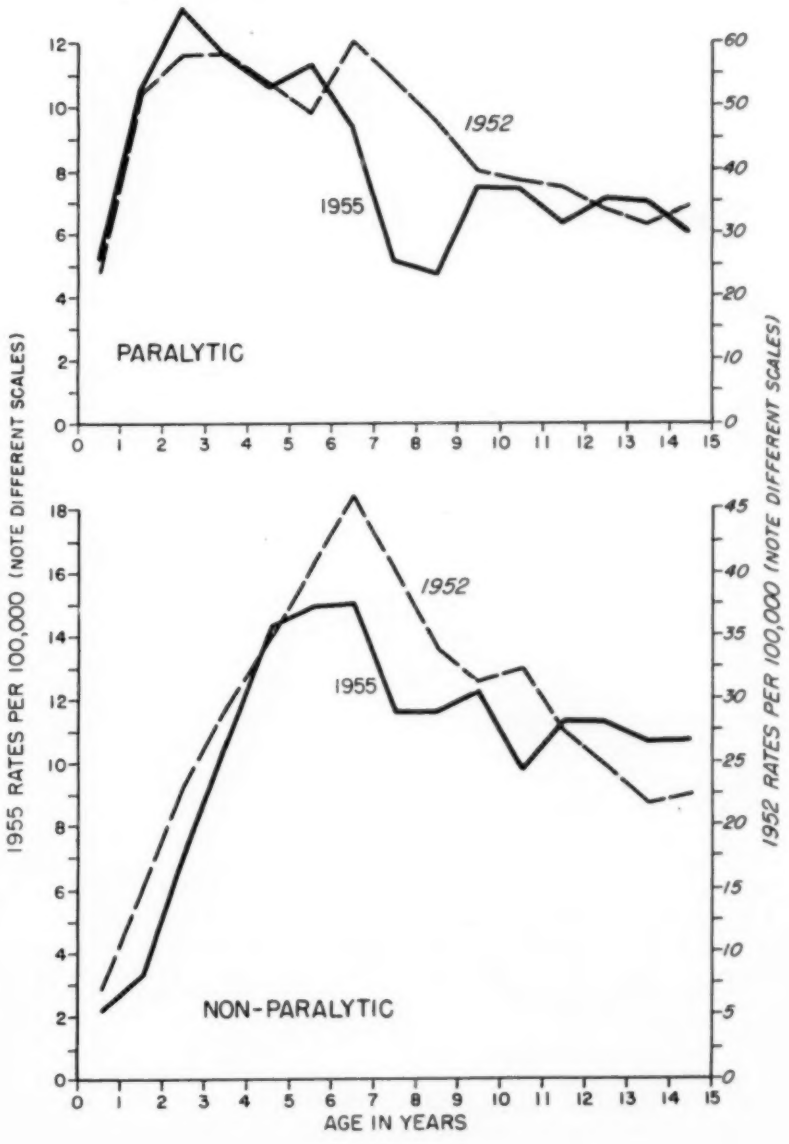
Langmuir also reported that the surveillance unit had received complete data on 204 cases occurring in association with vaccine produced by Cutter Laboratories. Of these 204 cases, 79 occurred among vaccinated individuals, 105 among family contacts of vaccinated individuals, and 20 among community contacts of vaccinated individuals.

In May 1955 safety standards and clearance procedures for poliomyelitis vaccine were revised. No epidemiological evidence has come to light that tends to render suspect any lot of vaccine of any manufacturer cleared under these revised safety standards, Langmuir stated.

Preliminary reports are now available from 11 States and 1 city on the effectiveness of poliomyelitis vaccine as used in the United States in 1955. These reports showed that rates for paralytic poliomyelitis were one-half to one-fifth as great among vaccinated children as rates among unvaccinated children of the same age.

In an attempt to find an independent confirmation of this trend in favor of the vaccine, data on the age distribution of all cases of poliomy-

Paralytic and nonparalytic poliomyelitis rates, 1952 and 1955.



elitis in 1952 and 1955 have been collected from a total of 33 States. Analysis of these data has shown that paralytic attack rates were sharply reduced among children of ages 7 and 8 in comparison with rates for previous years. Langmuir stated that this sharp reduction, limited to the age group in which the great bulk of vaccine was used, constitutes an independent confirmation of the effectiveness of poliomyelitis vaccine as used this year for the prevention of paralytic poliomyelitis.

Louisiana Study Probes Poliomyelitis Immunity

Observations on poliomyelitis infections, under way in a 5-year study of newborn infants and their family associates in about 150 representative households in southern Louisiana, are substantiating many of the inferences drawn from indirect and retrospective data.

Use of tissue culture techniques has enabled the four epidemiologists from Tulane University, who are conducting this first large-scale prospective study, to obtain first-hand information on when and under what circumstances people acquire immunizing infections against poliomyelitis.

Reporting the 109 episodes of infection observed since April 1953 were John P. Fox, M.D., Ph.D., M.P.H., Henry M. Gelfand, M.D., Dorothy R. LeBlanc, B.S., R.N., and Donald P. Conwell, M.D., M.P.H., all of the university's department of tropical medicine and public health.

To determine an infectious state, serum is examined for neutralizing antibodies and stools for virus. Specimens are collected monthly from the newborn index children and annually from the other family associates. Serum specimens and a basic epidemiological record were also obtained on admission to the study. Appearance of antibody or a virus isolation in the index child signals an immediate return to the household for further specimens and clinical and epidemiological observations.

Subclinical Infections

Among the more than 200 persons infected during the household episodes, Fox and associates reported, about one-third gave histories of minor febrile illness, but none had clinically diagnosed poliomyelitis, even though the infections were caused by viruses distributed as to antigenic type in about the same way as those concurrently causing paralytic disease in the study areas of urban New Orleans and Baton Rouge and the semirural Evangeline area.

The absence of paralytic disease is not surprising, they said, since it has long been recognized that paralysis occurs with only a small proportion of infections. The Louisiana findings go a bit further, they pointed out, by indicating that at least two-thirds of infections produce no obvious symptoms.

Intrahousehold spread to nonimmune members was the rule in these silent immunizing infections just as in families with cases of overt disease, they found. Ninety-five percent of the nonimmune members were infected along with the index child.

Renewal of Immunity

They found also that 20 percent of the previously immune members were reinfected, but excreted little virus. Persons with relatively low titers, median 1:40, were usually selected for reinfection. This "fairly unique" finding, they said, supports the theory that immunity may be renewed by occasional reinfection.

The virus types predominating differed in the areas and time periods. Type 3 virus was most prevalent in 1953–54 and type 1 in 1955. These data indicate that there are cycles of predominance of one or another virus type and that the cycles may be conditioned by corresponding deficiencies in immunity to the different types in the very young segments of the population, they concluded.

The findings on the relation of race, economic status, and family size to the early acquisition of infection and the season of occurrence were similar to those described by previous workers, they reported.

Infections, they found, were most common in Negro households, in families with older nonimmune children, and during the summer months.

Age specific frequencies of seroimmunity to the three virus types were determined for all members of the study households in 1953 and again in 1955. Overall, 60 percent were immune to a given virus by age 4 and 90 percent by age 10.

Immunity developed most rapidly in the Negro group. The white lower economic group followed fairly closely, and the white upper economic group lagged well behind. The immune percentages for the three groups in 1953 were 79, 74, and 64, respectively. These relative positions had changed very little by 1955, they said.

Tuberculosis . . .

Says Tuberculosis Research Needs Prompt Attention

Further advances in tuberculosis research are needed if the disease is to be eradicated or even controlled within a reasonable time, commented Floyd M. Feldmann, M.D., Dr.P.H. medical director, National Tuberculosis Association, in discussing unresolved problems in tuberculosis research.

"To be brutally frank," he said, "the tools now in use are inadequate for the job. They are immeasurably

better than they used to be, but they are far short of the precision for which they are usually given credit. A certain amount of success has led to a routine acceptance and a lack of critical evaluation."

Although deaths from tuberculosis have decreased dramatically, the reports of new active cases and the number of current active cases are decreasing slowly, if at all. Tuberculosis will be a major health problem for generations unless new tools for control are developed, he asserted.

The basic difficulty in tuberculosis control is the reservoir of infection. Many of the estimated 40 million people who carry live tubercle bacilli will develop active disease, but their number and identity cannot be predicted each year on the basis of present knowledge, he said.

Discussing the deficiencies in laboratory tests, epidemiological data, drugs now in use, Feldmann went on to make the following points:

As a screening test, the survey chest X-ray is poor; at least one-third of the lung area is hidden from view. Also, the experts' subjective errors in reading may result in missing as much as 20 to 30 percent of the films showing significant lesions. The experiments with high voltage diagnostic X-rays, xeroradiography, or multiple views may lead to better results.

There is surprisingly little reliable data on how to use the tuberculin test or on which to determine its practicality. That no one technique or dosage is now considered superior is obvious from the variety of tuberculin tests in common use. Few attempts to relate test results to active cases found or missed have been made. A tuberculin test method suitable for rapid mass use would be welcomed.

In laboratory diagnosis, the current routine procedures for disinfection, as a preliminary to animal inoculation or culture, kill from 80 to 98 percent of the tubercle bacilli in the specimen. If tubercle bacilli are present in large numbers, the laboratory test will be conclusive, but if few germs are present, they may not be detected.

Treatment

Drugs in use are toxic, are not bactericidal, must be given over long periods, and often fail, Feldmann asserted. The exact mode of action is unknown and the clinical applications of the drugs have been built on a trial and error procedure, he declared.

Only pyrazinamide in combination with other drugs can be demonstrated to have an eradicative action in animals with tuberculosis. This supports the hope that a drug or a combination of drugs deadly to the tubercle bacilli could dramatically shorten the time necessary to eradicate the disease.

Research in nutrition may contribute much toward therapy and prevention of tuberculosis, he said. Although limited evidence indicates proteins and the vitamins A and C are of importance, little research is now going on to determine their specific roles.

Bacteriophages active against tubercle bacilli in humans have been conclusively demonstrated only recently. Advances in chemistry are making possible more exact determinations of the metabolism and the complex enzyme systems the bacillus maintains. The many strain variations have led to attempts at better classification and work on the relationships between drugs, virulence, and other attributes. All of this work, Feldmann declared, has focused interest on the possibility of new approaches to an effective vaccine.

Urges Outpatient Therapy For Selected Cases Only

For tuberculosis patients who either cannot or will not be hospitalized, ambulatory treatment is indicated, advised Joseph B. Stocklen, M.D., on the basis of reported effectiveness of such treatment in a fairly high percentage of patients. Dr. Stocklen is controller of tuberculosis for Cuyahoga County, Ohio, and assistant clinical professor of medicine and preventive medicine, Western Reserve University.

In view of an estimated 85,000 deficiency in tuberculosis beds, there is a choice of neglecting a large number of patients or treating them as outpatients, he declared. By providing outpatient treatment for this large reservoir of active cases, he emphasized, a substantial reduction should be made in the bacterial population and the incidence of tuberculosis should decline.

He based his estimate of bed deficiency on Public Health Service reports of the percentage of known active cases of tuberculosis that are hospitalized, the number of patients hospitalized, and the number of beds available.

Hospitalization, however, Stocklen said, is still the procedure of choice, despite success in outpatient treatment. He recommended that the patient be advised from the beginning that the hospital is the best place to treat tuberculosis both from his own standpoint and from that of the community. But if hospitalization is not possible, he stated, outpatient treatment should be planned for the patient.

Effective and Feasible

Pointing out that the literature offers little direct evidence either to support or to condemn outpatient treatment, Stocklen cited three studies that "appear to indicate that outpatient treatment is effective and feasible in a fairly high percentage of selected cases."

In one study, reported in 1952 by Jane P. McCollough, 61 of 205 selected patients treated with pneumoperitoneum were considered to have inactive or arrested disease 1 year or more after treatment was begun. Except during an initial 3-day period, all treatment was given on an outpatient basis.

In a second study, reported by Arthur B. Robins and others in 1954, 348 unhospitalized patients with ac-

tive tuberculosis were treated with isoniazid and PAS for at least 4 months. After 6 months, 39 percent had improved radiologically; no change was observed in 55 percent, and 6 percent showed progress of the disease. Of 222 patients with positive sputum, 99 converted to negative.

In a study of his own, Stocklen found that of 163 active tuberculosis patients treated as outpatients with streptomycin and PAS, 67 did not need hospitalization. These patients were observed for 9 months or longer.

All these studies, Stocklen remarked, were deficient in that the followup period was short and there was no control group. Nevertheless, he considered the evidence convincingly in favor of outpatient treatment in selected cases.

Against Outpatient Treatment

Stocklen mentioned the following arguments against widescale use of outpatient treatment:

1. If the patient is infectious, he very probably will be a greater health hazard at home than in the hospital.

2. Patients probably receive better care in a hospital than at home and thus the prognosis is probably better.

3. A policy of outpatient treatment may encourage some patients to leave the hospital against advice.

4. Some patients will develop antimicrobial resistant tubercle bacilli after prolonged antimicrobial therapy without conversion of sputum to negative. There is evidence that these organisms have the ability to infect other persons and that they retain their resistance.

In an outpatient treatment program, he said, sputum should be examined and chest X-rays taken at routine intervals. If at the end of 6 or 8 months of outpatient treatment, sputum has not converted to negative or pulmonary cavities have not closed, hospitalization should be insisted on. If the patient will not agree, enforced isolation should be considered.

Rheumatic Fever . . .

Rheumatic Fever Study Uses Sibling Controls

The effectiveness of injections of benzathine penicillin G in the prevention of rheumatic fever was described by Tom R. Hamilton, M.D., in connection with a 21-month study which included, as a control group, 104 siblings of 53 rheumatic outpatients, representing 50 families. While the outpatients were receiving prophylactic injections, their siblings had none.

Collaborating in the study were Antoni M. Diehl, M.D., assistant professor of pediatrics, and John S. May, assistant in microbiology and medical student at the University of Kansas School of Medicine, Kansas City, Kans. Dr. Hamilton is professor and chairman of medical microbiology at the medical school.

The authors in 1954 recommended siblings as a control in such a study on the grounds that members of one family in close contact live in a like setting and resemble each other genetically, with a similar susceptibility.

In the pilot study, benzathine penicillin G had been injected intramuscularly every 28 days in a dosage of 1.2 million units for each of 22 children. Cultures were taken for beta hemolytic streptococci of Lancefield group A from the treated children 28 days after the last injection. None were positive. No antistreptolysin-O titers were above 500 units. In 7 families of these children, however, there was evidence of recent streptococcal exposure. Positive cultures were obtained from the nose and throat of one sibling in each of 4 families, and one sibling in each of 3 families had titers above 500.

Hamilton and his associates reported that in the period from January 1954 through October 1955, there were 2 peak seasons for streptococcal infections. Results of cultures for group A streptococci for the 21-month period are summarized in table 1. The protection against infection provided the treated children is indicated in table 2.

The frequency of positive cultures among the untreated was 10 times as high as among the treated children. This could happen by chance only once in 10,000 trials. The difference in the number of children with positive cultures (9 percent of those treated against 25 percent of those untreated) could have occurred by chance only once in 100 times. These data were analyzed statistically by chi-square.

In the study period there were no recurrences of rheumatic activity in the treated children. One untreated sibling under observation showed clinical signs of acute rheumatic fever, his first attack. His condition was recognized promptly. He was put under treatment; and he has been saved from residual cardiac damage.

Untreated children with rheumatic histories have about an even chance of a recurrence after a renewed streptococcal (Lancefield group A) infection. Prophylactic treatment aims to prevent progressive cardiac damage from such recurrences.

Cultures were taken at the Children's Convalescent Center, Kansas City, Mo., from the nose and throat on swabs. These were placed immediately in Pike's base as a transport medium and brought to the microbiology laboratories at the University of Kansas Medical Center.

There, each tube was incubated for 6 hours at 37.5° C. in Pike's medium. Poured plates were prepared for each culture; at the same time, blood agar plates were streaked from each tube of Pike's medium. Plates were read out after 24 hours of incubation at 37.5° C. Beta hemolytic streptococci were isolated from the blood agar plates. Lancefield grouping was carried out on these isolated organisms.

Table 1. Group A beta hemolytic streptococcus incidence, by number of cultures

Subjects	Number children	Number cultures			Percent cultures positive
		Total	Positive	Negative	
Rheumatic children, treated	53	1, 000	6	994	0. 6
Siblings, untreated control	104	705	45	660	6. 4
Total	157	1, 705	51	1, 654	3. 0

Table 2. Group A beta hemolytic streptococcus incidence, by number of children cultured

Subjects	Number children	Children with at least 1 positive culture	Children with all cultures negative	Percent of children from whom positive culture was obtained
Rheumatic children, treated	53	5	48	9. 4
Siblings, untreated control	104	27	77	25. 9
Total	157	32	125	20. 3

Studies in Zoonoses . . .

Pneumonitis in Workers Linked to Turkeys

Psittacosis virus, which had been recognized in domestic turkey flocks in Texas, is believed to have been disseminated in 1954 in New Jersey by eggs or poults as latent carriers, or by infected shipping containers, three New Jersey scientists said.

At least 17 human cases of illness which were diagnosed as psittacosis were attributed to contact with infected turkeys. Most of the cases were in persons who were employed as eviscerators. One laboratory technician was taken ill and believed to have died from psittacosis infection.

Reporting on the situation were Oscar Sussman, D.V.M., M.P.H., chief, bureau of veterinary public health; Eleanor Thomas, A.B., principal serologist; and Anthony J. Lucci, B.S., senior serologist, New Jersey State Department of Health, Trenton.

New Jersey has been equipped for virus isolation work for a number of years, and psittacosis, had it been present to any extent in prior years, would have been diagnosed, they asserted.

First Evidences

On September 20, 1954, the owners of a small turkey farm at Dutch Neck, N. J., noted that many of their 2,000 birds appeared to be ill and had developed diarrhea. Until November 22, various treatments were tried at the suggestion of a feed salesman, including sulfathiazole, penicillin, streptomycin, and aureomycin, mixing of the dosages in feed or water, and even intramuscular injections. Three hens and a tom died and were taken to Rutgers University for examination on November 1. Four persons who had helped inject the birds on November 2 became ill with virus pneumonia between November 9 and 28.

On November 22, 1954, the poultry diagnostic laboratory at Rutgers reported a positive diagnosis of psittacosis, and the farm was placed under quarantine by the State health department, they said. Birds were not to be sold without inspection. Blood samples were obtained from workers who had helped slaughter birds. Several additional birds were examined.

On November 29 enough oxytetracycline and tetracycline were obtained to treat all human contacts and to start an experiment to cure the birds. Birds that appeared ill or died prior to November 29 were sent to the University of Pennsylvania, where Dr. Raymond Fagan is cooperating in the experiment to evaluate treatment of the surviving turkeys, they said.

Epidemiological Investigations

The farm owners raised no birds for replacement. Each spring, the stock was purchased from 5 sources,

3 in New Jersey and 2 in Pennsylvania, they reported. The Pennsylvania sources were referred to the State health department at Harrisburg.

At an Elizabeth slaughterhouse it was found that 2 of the 6 workers were ill. This plant had purchased birds from the stock farm.

One source at Englishtown, used by the Dutch Neck farm to replenish its stock, handled poults. It also acted as agent for a New Brunswick hatchery which purchased eggs from the two Pennsylvania sources and from Texas and southwest California. At Englishtown 4 of the 5 workers were ill with severe colds during July and August, possibly from contact with infected poultry. The 19 bird serums tested indicated that there was probably little active infection at Englishtown. Two serums reacted at 1:8, three at 1:4.

A second source of supply, Turnersville, had no sick birds. The owner regularly included antibiotic in the feed, however. The owner had had bronchitis after Thanksgiving in 1953 and 1954; his serum titer was 1:4 as was that of one of the workers. Another worker had a 1:64 titer and reported a bad cold after Thanksgiving. This source purchased eggs for hatching from Texas and also bred some of its own stock.

The third New Jersey source was at Cranbury. The owner purchased poults and eggs from Connecticut and Oregon sources, neither of which dealt with Texas firms. No illness was found in the birds.

Laboratory Procedures

The indirect complement fixation technique was used to test the birds and the direct test was used in human serums. Lygranum antigen and high-titered human serums were used in place of positive pigeon serums. For humans, lygranum antigen or psittacosis antigen, supplied by the PHS Communicable Disease Center, was used.

Aliquot portions of human and of turkey serums were sent in some instances to the CDC and the Hooper Foundation in California. Correlation of results from both laboratories were within limits of acceptable variations, they reported.

A 9-month serum sampling of the workers affected indicate significant reactions and corroborate prior diagnosis of psittacosis, they said.

Iowans Find T. spiralis In Wildlife Species

Regulations in 47 States which prohibit the feeding of raw garbage to swine may be an important factor in the significant reduction in the incidence of *Trichinella spiralis* in pork products, according to W. J. Zimmermann, Ph.D., L. H. Schwarte, D.V.M., Ph.D., and H. E. Biester, V.M.D., of the Veterinary Medical Research Institute, Iowa State College, Ames, Iowa.

Zimmermann and his associates examined various pork products to determine the incidence of trichinae larvae. This study of 1953–54 as compared with the 1944–45 study in Iowa of trichinae larvae in bulk and link sausage showed 2.2 and 2.4 positive percentages as against 11.9 and 11.4 in the earlier study.

There were 187 cases of human trichiniasis reported in the United States through August 1955, of which 10 occurred in Iowa, they said. The incidence of human trichiniasis has fluctuated widely in the last decade; in 1945, 257 cases were reported in the United States with 133 of these cases occurring in Iowa. However, in 1950 there were 327 cases reported in the United States and none in Iowa, according to Zimmermann and his co-workers.

Although in the past the prime source of human infection was improperly cooked pork from swine which had been fed raw garbage, the source of infection for grain-fed swine remains an unsolved problem, they said. In the recent study, diaphragms of 2,184 swine were examined. The swine were chosen from four areas of Iowa, from college herds, and from a small packing house. Only one proved positive.

Wildlife Reservoir

To determine if wild animals were the reservoir perpetuating the trichinae, 119 rats were obtained. These included 10 from the Veterinary Medical Research Institute, 17 from a farm, and groups of 61, 20, and 11 from three separate villages and city dumps. Fourteen of the 61 rats from one of the dumps proved positive. This was the same area from which 1 of 687 pig diaphragms proved positive. All other rats in the study were negative.

Eighty-five wild mink were examined during the two seasons of the study. Twelve (14.1 percent) were positive. The finding of trichiniasis in the wild mink is of particular importance since the disease had never been reported from this species in the United States. All ranch-raised mink examined (four) were negative.

Thirty (11.9 percent) of the 252 adult foxes examined during the 2 years were positive. The intensity of the infections was less than in some other species. Only 1 fox cub out of 56 proved positive.

Of 40 opossums only 1 was infected with trichinae. This infection was not intense and is possibly the first reported in this species, they said. Of 229 raccoons examined, only 2 were positive, while there were 2 coyotes out of 4 examined that were infected.

A variety of other animals were examined with negative results. The Iowa study group believes that a possible explanation for the absence of infection in carnivorous birds and snakes is that the body temperatures of these animals do not favor survival of the parasites.

Modes of Transmission

Two possible modes of transmission of trichiniasis from wildlife to swine have been suggested. They are fecal transmission, either of

larval or adult trichinae; or direct transmission when pigs eat infected carcasses. Both possibilities were studied by Zimmermann and associates.

The 9 tests in fecal transmission, using either infected rats or foxes as donor animals and either pigs, rats, or foxes as receptors, all proved negative. This should not rule out the possibility of fecal transmission, they stated, for other workers have carried out positive fecal transmission experiments.

It is difficult to ascertain what role, if any, rats and wildlife may play in the perpetuation of trichiniasis in grain-fed swine. Since trichiniasis is found in many of the species of wildlife, such species are an obstacle to the eventual elimination of this disease. This is true especially if a link is found between trichiniasis in swine and its reservoir in the wildlife. Then, the trichiniasis problem will only be more clearly defined, not eliminated, they said. It would be impossible, as well as impractical, to eradicate all species of wildlife which may act as reservoirs.

Human Brucellosis Yields To Antibiotic Therapy

Streptomycin and sulfadiazine and other antibiotics have proved to be effective in the treatment of brucellosis—undulant fever—one of the more common diseases transmissible from animals to man, according to Wesley W. Spink, M.D., professor of medicine at the University of Minnesota Medical School, Minneapolis.

Spink pointed out that the causative bacteria are excreted in the milk of cows, sheep, and goats. Man contracts the disease by drinking unpasteurized milk obtained from infected animals. Another mode of transmission is by direct contact of humans with infected animals or their contaminated environment. Employees of meatpacking houses, livestock producers, farmers, veterinarians, and laboratory personnel are most likely to be exposed to the infection.

The disease causes acute symptoms resembling those of influenza, and a chronic and debilitating illness may result, Spink said. Since therapy is now available, prognosis depends largely upon prompt diagnosis and proper treatment, he said. A brucella agglutination test and blood cultures are the only sure determinants of the infection.

The first major breakthrough in treatment occurred in 1947, Spink reported, when a patient with subacute bacterial endocarditis provoked by *Brucella abortus*, hitherto fatal, responded favorably to a combination of streptomycin and sulfadiazine. The patient since has had no recurrence.

Effective results were obtained with aureomycin in 1948 at the Minnesota Medical School, when 90 percent of the patients treated recovered with treatment of this drug alone. Aureomycin has an advantage over other drugs in that it can be administered orally in capsules. An effective course is 2 capsules (0.5 gm.) four times daily for 21 days, Spink said.

More recently, tetracycline has been tried and found promising, Spink said. There is some evidence, he reported, that a combination of streptomycin and tetracycline may yield better therapeutic results in severe cases than the use of tetracycline or aureomycin alone.

Approximately 300 patients have been treated at the University of Minnesota Medical School from 1937 to 1955, he said. Because of the improvements in antibiotics, he declared that it now can be concluded that in a properly treated group the course of the disease is shortened, new complications do not occur, and complications that are present can be eradicated.

Eradication of the disease, Spink concluded, is dependent upon elimination of the reservoir of the infection in beef and dairy cattle, swine, goats, and sheep.

Teamwork in Texas Ends Rabies Threat

When the number of animal rabies cases reported in Harris County, including Houston, Tex., reached a peak of 486 laboratory diagnosed cases in the latter part of 1953, it aroused citizens as well as officials to take emergency control measures. Their efforts, started in 1954, resulted in a rabies-free month in October 1955.

The events leading to what became the largest mass vaccination campaign against rabies ever conducted in the United States were described by Ernest S. Tierkel, V.M.D., M.P.H., chief, Rabies Control Activities, Communicable Disease Center, Public Health Service, Atlanta, Ga., Fred K. Laurentz, M.D., director, Houston Health Department, L. D. Farragut, M.D., M.P.H., director, Harris County Health Unit, and Reuben D. Wende, M.S., director, Houston Health Department Laboratory.

Although rabies incidence in the area had been carefully observed for 10 years, no organized control effort was made until after the high or record-breaking incidence was reached, they said.

The first control effort, a vaccination and leashing ordinance passed in 1945, applied only to the city of Houston. This was ineffective since animals exposed to rabies were often abandoned outside the city and became stray animals providing a reservoir of infection, they commented.

Campaign Organization

The health department, in 1954, through the newspaper accounts and radio broadcasts, stimulated the public to act, they said. A Citizens' Rabies Advisory Committee was formed to inform the public, to coordinate control activities in city and county, and to gain community support for further control activities. Both health departments, medical and veterinary societies, farm groups, civic clubs, and the mass

publicity media constituted the nucleus of the organization, they explained.

A review of human rabies cases in Houston and in Harris County in a national journal gave the campaign impetus. Additional pickup trucks and crews were obtained and a modern animal shelter was built in Houston.

The major wedge into the rabies front came, however, when the Texas State Legislature, meeting in special session, authorized metropolitan counties to require vaccination of all dogs, they declared.

The help of the Public Health Service was obtained at the request of the county health officer through the State health department. An intensified emergency rabies control campaign was charted with the Houston Veterinary Medical Society and the Houston and Harris County Health Departments. The plans called for free prophylactic antirabies canine immunization with services donated by the local practicing veterinarians and vaccine and clinic supplies provided by the local governments.

Immunizations

Ninety-two locations were chosen as clinic sites. These were selected on a basis of population densities and rabies incidence. Fire department stations offering large, sheltered work areas with available parking space nearby, were used.

A 4-day schedule was set up, with arrangements made for early evening as well as afternoon sessions. The city and county were divided into four sections. An average of 23 clinic sites were set up in each section.

Because of the publicity, efforts of the citizens' committee, the campaign itself was largely a matter of letting the public know the clinic sites, dates, and time. Newspapers, radio, and television cooperated. Literature and posters were distributed through the city and county school systems, with clinic schedules attached. Although dog registration or licensing was mandatory in the city and county, the requirement was not mentioned in the vaccination campaign.

Operation of the clinics was kept as simple as possible. With vaccination, a tag and certificate were issued. City and county sanitarians supervised each clinic; one or more veterinarians administered the vaccine; public health and Red Cross volunteer nurses helped prepare the syringes; and clerical duties were performed by Boy Scouts, 4–H Clubs, and other volunteers.

Each clinic began operating with supplies for 300 dogs, but after 1½ hours on the first day practically all clinics had exhausted the supply. Police and sheriff's radio cars were used to deliver supplies. For the following days, supplies were doubled, but still, in some instances, additional supplies were needed, they said.

With the 4-day campaign and a clinic at the dog shelter on a fifth day, 44,390 dogs had been vaccinated, the largest number ever immunized in the United States in one campaign, according to Tierkel and his associates, and with the 20,000 privately vaccinated dogs they gave the county a large population of rabies immune animals.

Decline in rabies incidence was slow from September 1954 through May 1955, they said, but became more rapid through June–September, and no cases were found in October 1955.

Estimates Dog Population By Sampling Procedure

A statistical method for accurately estimating a community's dog population was developed early in 1955 in Harris County, Tex., as part of a rabies control program that originally had been based on a rule of thumb estimate of 1 dog per 10 humans.

Reporting the new method were: Joseph L. Zarefsky, M.S.W., director, research bureau, Houston Community Council; Dale Houghland, M.P.H., health education director, and Reuben D. Wende, M.S., laboratory director, Houston Health Department. The rule of thumb estimate of the dog population was 100,000, they said. The sampling method gave an estimate of 191,000 owned dogs.

The new procedure stemmed from a request by the Houston Health Department and the Harris County Health Unit after the laboratory reported there had been no sharp decline in the number of rabid dogs found 6 months after a community-wide rabies inoculation campaign, they said. The possibility that the inoculations had not reached as high a percentage of the dog population as thought prompted the request.

Owned Dogs

The procedure had to be developed quickly, without extra funds, they said. Harris County has 1,700 square miles and a population of 1,023,000. Houston has one-tenth of the land and 70 percent of the population.

Essentially, the method is to use a simple probability sample to ascertain the average number of dogs per dwelling unit with a maximum error of 10 percent at the 95 percent probability level, they explained. To find the size of sample required, it was assumed that there was 0.24 dog per dwelling unit as had been found in the 1952 Denver study.

It was found that a sample of about 1,700 dwelling units throughout Houston and Harris County would yield an estimate of the required precision, they reported. On the basis of census tracts in the county, sampling points were allocated in the same proportion as the dwelling units—a tract having 2 percent of the county's dwelling units received proportionate attention, they explained.

The enumeration was completed in about 3 days. The schedule had four questions. The first was on dog ownership and if the answer was "yes," how many dogs were owned, was each dog vaccinated during the

previous campaign, and how many persons live in the unit.

Unowned Dogs

Stray dogs were assumed to be distributed in the same manner as the dwelling units where food would be most likely available, and a dragnet procedure at sampling points is to be arranged, they said. The dragnet, according to the local humane officers, would be best in the early morning hours when it is cool and the dogs are out looking for food. Thus, they explained, the same sampling method could be used on owned and unowned dogs. When this sample is made in the spring of 1956, the figure will be added to the maximum estimate (212,000) of owned dogs to give health officials the data they need as to actual dog population in the inoculation program.

State Laboratory Confirms Leptospirosis in N. C.

On the basis of recent laboratory tests, leptospirosis appears to be widespread in North Carolina. As a result, serologic tests for leptospirosis now are a routine procedure in the North Carolina State Laboratory of Hygiene.

Nell Hirschberg, Ph.D., bacteriologist, and Lynn Maddry, Ph.D., assistant director of the laboratory, and Martin Hines, D.V.M., chief of the section of public health veterinary medicine, North Carolina State Board of Health, stated that the suspected prevalence of leptospirosis makes laboratory diagnostic services essential at the State level. They advised health officers of other States that cases reported as infectious hepatitis may actually be leptospirosis. Furthermore, whenever leptospirosis is diagnosed among domestic animals, health officers should be alert to the possibility of the disease in humans.

North Carolina is not experiencing the classic Weil's disease, they said, but rather a mild form, usually, but not always, accompanied by jaundice. Domestic animals, especially dogs carrying *Leptospira canicola*, and cattle carrying *Leptospira pomona*, transmit the infections to man.

Weil's disease is rarely reported in the United States. It usually occurs among persons such as trench diggers and subway workers who work in the ground or who come in contact with rats.

Since the North Carolina laboratory announced the diagnostic service, it has received an increasing number of requests for *Leptospira* tests on patients who have had no contact with rats and who appear to be ill with symptoms resembling those of infectious hepatitis or influenza.

Veterinarians in the State are also receiving an increasing number of requests for *Leptospira* tests on animals, they stated, but apparently there is no correlation between the two types of requests.

Infectious Hepatitis

Hirschberg, Maddry, and Hines reported that until recently only 1 or 2 cases of leptospirosis in humans have been reported annually in the State.

Although only 10 cases of leptospirosis and a similarly small group of serum jaundice cases were reported in 1954, the laboratory results suggest that most of the specific but unreported cases of leptospirosis probably had been reported as infectious hepatitis.

They believe that a large number of cases in the past were reported as "infectious jaundice," a classification which included bacterial and viral hepatitis until the title was changed to infectious hepatitis in 1952. All forms of infectious hepatitis except leptospirosis are now grouped under the single classification on the revised report form.

A 1954 survey showed infectious hepatitis spread over the entire State with large numbers of cases from counties with diagnostic medical centers or occasionally from counties in which there was a well-defined epidemic. All told, there were 1,055 cases of infectious hepatitis reported, and probably many of these cases were in fact leptospirosis, they stated.

The Test

The choice of serologic tests depends to some extent on conditions in the laboratory performing the tests, Hirschberg and her associates stated.

The agglutination test with formalin-killed *Leptospira* became standard in the North Carolina laboratory in January 1954. The agglutination-lysis test is not used routinely because of the danger inherent in the use of the living, motile organism. When paired serums are available, the North Carolina laboratory sends them to the Communicable Disease Center Laboratory of the Public Health Service for complement fixation.

One of the paradoxes of the disease is the ability of the *Leptospira* organism to remain alive for years in natural waters, to grow in tap water fortified with serum, and yet to disintegrate spontaneously without warning in the laboratory or remain alive without apparent multiplication.

No examples of positive tests have ever been found in individuals who have not been infected with the organism before or who are not ill with leptospirosis at the time. In other words, native antibodies to these organisms are not found. Sixty-three veterinarians who were bled for *Leptospira* all tested negative.

Four standard strains of *Leptospira* are considered sufficient to prepare antigens for routine agglutinations: *Lept. canicola* and *Lept. pomona* as well as the agent for Weil's disease, *Leptospira icterohemorrhagiae*, and the cause of Fort Bragg fever, *Leptospira autumnalis*. Eight other strains were tested to see if infection with exotic strains might also be prevalent in North Carolina.

The organisms are grown in a modified Korthoff's medium for 5 days, killed with 0.3 percent formalin, allowed to stand for 24 hours, then

centrifuged and used after 48 hours. The antigens remain satisfactory for 10 to 30 days. The test is not a suitable one for small laboratories, they said.

Results

Apparently there was no correlation between the infectious hepatitis reported and the specimens tested with regard to location, age, sex, or color. Of 441 specimens tested, 109 were positive. Twenty-nine agglutinated *Lept. canicola* and 36 *Lept. pomona*. The remainder showed cross agglutination.

Most of the specimens came from school children and also from adults in the age group between 30 and 34 years. Hide workers accounted for 21 of the positives, but 61 were unaccounted for. The rest were from housewives, caretakers, nurses, physicians, farmers, food-handlers, morticians, and factory workers.

The North Carolina laboratory does not routinely test animal specimens, but serums were received from animals associated with human leptospirosis. However, the new animal diagnostic laboratory in the State occasionally referred icteric serums from animals in which the diagnosis was obscure.

Of the 93 animals tested, 69 tested positive with some degree of cross agglutination but less than was experienced with the human specimens. Fifteen of 18 dogs were positive, 10 with *Lept. canicola*. Thirty-seven of 49 cattle were positive, 31 with *Lept. pomona*. Positive specimens were also distributed in low numbers among swine, horses, goats, mules, and sheep.

Visceral Larva Migrans—A Public Health Problem?

Recent studies show the dog to be an important reservoir of visceral larva migrans, a newly recognized disease responsible for long periods of subnormal health in young children, according to Paul C. Beaver, Ph.D., professor of parasitology, Tulane University School of Medicine.

Visceral larva migrans was so named because the causative agent, a nematode larva, *Toxocara*, migrates extensively in the internal organs much the same as the hookworm larva that produces cutaneous larva migrans migrates in the skin, Beaver said. One feature of the infection is that the larva of *Toxocara*, a common worm parasite of dogs and cats, can invade nearly all tissues of children. The larva undergoes several weeks of active migration and can persist alive for months. Dogs and cats are natural hosts for *Toxocara;* man is not.

Beaver reported that a high percentage of dogs the world over have been host to *Toxocara canis*, that *Toxocara* eggs are eliminated in the feces, and that surface soil samples from urban dooryards show hundreds of viable eggs in a few grams of soil. The eggs will remain infective in damp soil for months if permitted to accumulate. Many *Toxocara* eggs destined by nature to find their way into dogs and cats are swallowed by toddlers known as dirt-eaters, he said.

"In well-organized communities popular sentiment in favor of further limitation of the freedom of dogs, even those walked on a leash, probably is ready for public expression," he said. "It is not now a question of whether promiscuous defecation by dogs is a public health hazard. The real question is whether a way can be found to discuss this public health problem openly and to reach agreement on acceptable control measures."

Newly Described

Beaver said that the incidence of visceral larva migrans is unknown. In the absence of satisfactory methods of serologic diagnosis, proof of infection is based on biopsy or autopsy findings. Further, the disease, though doubtless ancient, was first recognized in 1952 in New Orleans. Reports show that the disease is gaining recognition outside Louisiana, and *Toxocara* larvae may have caused at least one human death, he added.

Symptoms of *Toxocara* infection vary with the number of larvae involved and the duration of the infection. Light infections usually are well tolerated, and the majority of infections probably are subclinical. Clinically, the disease may resemble pneumonia, miliary tuberculosis, asthma, whooping cough, eosinophilia leukemia, and retinoblastoma.

A sharp increase in the number of circulating eosinophils is conspicuous in all *Toxocara* infections. Even in the absence of apparent symptoms, the number of eosinophils may exceed 50 percent of the total leukocytes. Formerly, the disease was often referred to as Loeffler's syndrome, familial eosinophilia, tropical eosinophilia, leukomoides disease, and eosinophilic pseudoleukemia.

The child with moderate infection usually has fever, an enlarged liver, and some degree of pulmonary infiltration in addition to the marked increase in eosinophils, he continued. With heavier infections, these symptoms become more marked, and a history of dirt-eating is usual. There may be cough, muscle and joint pains, and abdominal pains. Occasionally there are impetiginous lesions on the buttocks and legs. Less often there are convulsions and petit mal attacks and infections involving the eye.

Individual Control

Since no specific treatment for visceral larva migrans and no effective method for killing *Toxocara* eggs in the soil are known at present, prevention becomes of chief importance, Beaver emphasized. He listed the following means of prevention to help parents protect their young children from possible infection in the absence of rigid dog control:

Prevent children from eating dirt.

Destroy *Toxocara* (to some extent) by working surface soil to

hasten dessication or by turning top soil to put the eggs out of reach of children.

Keep dogs and cats free of worms that endanger the health of children.

Families with small children perhaps should forego having cats and dogs and pets even though this measure is not fully protective in an urban neighborhood.

Environmental Health . . .

Urges Work Begin Now On Cities of Future

To match the technological marvels forecast for the city of the future with improvements that will assure a healthful, comfortable environment is the challenge facing the public health engineering profession, said Morris M. Cohn, Sc.D., editor of *Wastes Engineering*, New York.

With a 60 million increase in population expected by 1975, both central cities and fringe areas will experience growth, Cohn predicted. The challenge, then, is to rehabilitate central cities to meet the standards of 1975 and to build fringe communities in a pattern that will be modern two decades hence. It is necessary to plan entire areas on a metropolitan basis, so that the pieces of community life can be integrated into a well-organized tapestry, he said.

"We need a multibillion dollar sewage treatment construction program," he contended, "to provide new facilities and regear old works. . . . We must put billions into industrial waste polution control programs. Waterworks systems must be expanded and improved to provide water of unimpeachable palatability, serviceability, and safety to meet the needs of 225 million people. Drought control and flood control must be achieved, not only by engineering structures, but by learning how to anticipate the vagaries of nature. . . .

"The refuse dump must be outlawed as an incongruity in modern community life. If our standards will not eliminate these areas, the filling in of blank land by people, instead of municipal rubbish, will surely outmode them. The fly, the rodent, the mosquito . . . must be eliminated by environmental sanitation practices. Slums must be wiped out, as breeders of unhealthy minds, bodies, and spirits. Food and milk sanitation must achieve superior standards of cleanliness and purity, perhaps through the use of such devices as atomic radiation. Smoke, smog, smaze, and smist must be cleared from the atmosphere by new methods of atomic heat and power and control of stack gases. Cities must be freed from litter."

In the light of the dreams and fantasies that have come true in the past, these goals are not impossible, Cohn declared. "If we blend our dreams with the vital ingredient of courage, we will assure a better nation and a better life in 1975," he said.

National Group To Attack Neighborhood Decay

Nearly half of America's 45 million nonfarm dwellings need routine maintenance to remain in acceptable physical condition. Another 20 million require repairs and improvements or substantial rebuilding to prevent eventual slums. An estimated 5 million slum dwellings must be eliminated and replaced by new homes. This is the target for a public health program envisaged by Henry F. Vaughan, Dr.P.H., dean of the University of Michigan School of Public Health.

Like an exotic plague, he said, the communicability of housing decay affects a susceptible population, which, although it eats well, dresses well, and plays well, includes too many who do not live well. The contagion of housing endodecay, which encourages room overcrowding and insanitary practices, and the contagion of housing exodecay, which creates shabby properties with decreasing values, have spread from block to block, from area to area, in all of our major cities.

To combat the plague of housing decay in urban America, a voluntary nationwide civic planning agency was organized to replace public apathy and neglect with ACTION. A.C.T.I.O.N. is the American Council To Improve Our Neighborhoods, and its 60-man governing board represents public health, industry, government, education, finance, civic and trade organizations, labor, and public service.

Vaughan, as one of ACTION's directors, described the work of the nonprofit, nonpolitical organization, which is financed by gifts from many sources.

The Ford Foundation has granted $250,000 to study impediments—and the means to remove them—to the provision of adequate housing. The Advertising Council has provided public service time and advertising space for ACTION's national education program, which is designed to alert citizens to housing opportunities and problems.

ACTION has opened the first of many local information centers in Cleveland to provide information on housing research techniques, code enforcement, legislation, community organization, and planning.

Enterococcus Indicators Aid in Water Tests

An enterococcus test would be a useful addition to the coliform test in gauging the bacterial contamina-

tion of well water, particularly when the coliform values are low or fluctuating.

This conclusion was drawn from a comparison of the two tests on water samples from 595 wells in 12 Kansas counties. To check the results of single samples from each well, an additional 66 samples from 59 wells were examined at intervals of 2 weeks to a year after the first sample. Detailed information on the physical aspects of each well was supplied through a questionnaire.

The study was conducted by Cassandra Ritter, M.A., chief bacteriologist, Ivan F. Shull, B.S.C.E., M.P.H., chief of the general sanitation section, and Robert L. Quinley, A.B., assistant bacteriologist, division of sanitation of the Kansas State Board of Health, University of Kansas.

The coliform MPN index was determined according to standard methods. For the enterococcus MPN determinations, the azide dextrose broth of Rothe, favorable to the growth of all enterococcus groups, was the presumptive medium and crystal violet azide broth the confirmatory medium. Another method in use, they explained, is selective for *Streptococcus fecalis.*

The coliforms and enterococci found in the well water samples were comparable in number, they reported (see diagram). Statistical evaluation showed the association of these two groups of bacteria was not by chance.

Results from 269 samples were negative in both tests, they found. At the other extreme coliforms in excess of 1,100 were always accompanied by enterococci. The 83 samples with enterococci alone and 49 samples with coliforms alone, plus the changes in numbers and relationships found in the check samples, suggest that the enterococcus test may be most useful when coliform values are low or indeterminate, they said.

Favor Inclusive Medium

Of the 424 enterococcus strains isolated from 80 samples selected at random, 284 were typical of *Streptococcus fecalis* and 140 fell into the atypical group. Of the 28 samples with atypical strains only, 78.6 percent yielded no coliforms. A high percentage, 84.6, of the 52 samples with typical enterococci was associated with coliforms in appreciable numbers.

It is possible, they said, that samples showing only atypical enterococcus recoveries may have contained typical strains at the source. However, their observations suggested that typical enterococci will be recovered if present since their growth is faster than that of the atypical strains.

Ritter and associates concluded that an inclusive medium is the method of choice for determining enterococci in water and compares with the standard method for determination of the coliform group.

Their evaluation of the physical aspects of the wells according to the coliform MPN index indicated that construction of the supply is more important than location. A greater degree of sanitary safety was suggested for the 453 drilled and driven wells. A coliform index of less than 2.1 for 70 percent of this group was reported; 13 percent had an index value greater than 28. Of the 121 dug wells, 18 percent had an index lower than 2.1 and 58 percent an index higher than 28.

Reviews Various Devices For Sampling Air

A review of several available sampling devices for the collection of suspended particulate pollutants from the atmosphere was presented by Elbert C. Tabor, M.S., of the PHS Community Air Pollution Program. He discussed in detail the filtration air sampling method used by the National Air Sampling Network and the Robert A. Taft Sanitary Engineering Center.

The network sampler is a modification of a high volume filtration sampler constructed by Silverman and associates in 1948. The modified version uses a glass fiber filter web instead of the pleated cellulose filter originally used. The glass fiber material is not affected by moisture and contains no organic substances. These features avoid diffi-

Scatter diagram relating to the most probable number indexes of coliform bacteria and of enterococci of 607 samples from 595 wells

Enterococcus MPN index	<2.1	2.1	4.7	8.3	14	28	45	93	240	460	1,100	>1,100
>1,100	1					1				3	2	19
1,100	1	1			1		3	1	2	2	6	5
460			1		2	1		2	1		1	5
240	4		1	1	1	2	3	3	1	2	1	3
93	4		1		2	2	2		3	3	1	9
45	5		1	1	2		3	3	2	3	1	4
28	7		4	2	2	3	2	3	1			3
14	9	1	2	2		5	3		1		1	1
8.3	10	1	2			2	2	1				1
4.7	16	5	2	2	2	2	1	1				3
2.1	26	4	4	2	3	4		2	1			3
<2.1	269	12	10	4	6	2	9	1	1	1	3	

Coliform MPN index

culties formerly encountered in weighing and analysis, he said.

The sampler mounts an 8'' x 10'' rectangular filter sheet in a stainless steel holder giving an effective filter area 7'' x 9'', or 63 sq. in. Air is drawn through the sampler by a vacuum cleaner type motor, initially at 50–60 c.f.m., with a drop in flow rate as sampling proceeds. The filter is reported to be 99.9 percent efficient for particles as small as 0.1 micron in diameter, he remarked.

Describing other air sampling methods, Tabor mentioned dustfall sampling through sedimentation as the oldest and most widely used method. Particulate matter falls by gravity or is carried by rain into a jar with a mouth of known size. A trapping liquid, usually water, prevents the dust from blowing out again. The weight of solid material collected during a month is reported as tons per square mile. The material collected is easily analyzed. The British have adopted a standard dustfall apparatus, and attempts to standardize are now going on in the United States.

Other samplers using the sedimentation principle are a directional dustfall collector and a settlement dust counter, he said.

Impaction sampling uses deflection of an air stream to collect particles for counting and sizing. By their momentum during a sudden change in airflow direction, the particles are deposited on a prepared surface. Available devices using this principle are the Owens jet dust sampler and the cascade impactor, he reported.

Thermal precipitation depends on the phenomenon of the dust-free space adjacent to a hot body. If dust-bearing air is drawn through a narrow channel past the hot body, the particles are deposited on nearby cold surfaces. Devices using this principle have a sampling head with heating and cooling devices and an air pump. There are several thermal precipitators available, and the devices are very efficient for collecting particles smaller than 5 microns, he declared.

Electrostatic precipitation samplers operate on the principle of the attraction of charged particles to an electrode of opposite charge. These devices are nearly 100 percent efficient for collecting particles below 5–10 microns. There are a variety of these samplers available. Collection of samples free of any medium is a major advantage of these devices, Tabor said.

Reviews Cook County's Disposal Difficulties

A "blow by blow" account of the mismanagement of sewage disposal installations in the expanding municipalities and subdivisions of suburban Cook County, Ill., was presented by Benn J. Leland, M.S., chief sanitary engineer of the county's department of public health.

Cook County, the largest county in Illinois, includes, besides Chicago, an area of 750 square miles and a population of about 800,000. Chicago's suburbanites dwell in 100 incorporated municipalities and in a great number of subdivisions. Such subdivisions have their own water supplies, wells in the front yards and seepage fields in the backyards. The seepage of septic tanks has produced a harvest of nuisances and health hazards in much of suburban Cook County.

However, the problems are not confined to subdivisions. A number of municipalities are not served by domestic sewer systems. Most of these communities have exercised less control over sewage disposal than the unincorporated areas.

Impervious clay soils are prevalent in the county. Most complications have arisen because individual seepage fields could not absorb septic tank effluents, which were therefore discharged in surface pools, roadside ditches, or creeks, creating odor nuisances and health hazards. Reports from 25 sanitary engineers serving other county health departments revealed that similar situations exist elsewhere in the United States, Leland said.

Construction

Residential construction increased sharply in the years after 1950, and building sites in areas served by sewers and public water supplies became ever more scarce. Most developers felt they could not finance installations of public facilities to new areas. They have perforce built residences with individual septic tank systems for sewage disposal.

In addition, since Cook County zoning ordinances permit lots of 10,000 sq. ft. in certain areas, many developers endeavor to have their lots reclassified from farming, 5-acre, 1-acre, or ½-acre zoning to the 10,000-sq.-ft. category, which provides the maximum number of building sites on a tract.

"While a lot of 10,000 sq. ft. is a good sized lot if public water supply and sewerage facilities are available, in many instances it is not possible to install adequate private facilities on such a limited lot area," said Leland.

All this has resulted in an avalanche of complaints to the public health department, which makes inspections and advises home owners of necessary improvements. If voluntary compliance is not secured, the department initiates enforcement action, but, ironically, such action must often be taken against property owners who perhaps have not even been aware of having been served by a septic tank and seepage system until it has failed.

Percolation Tests

In 1954, an ordinance was passed requiring that plats of proposed subdivisions, to be accepted and approved, must contain certifications that water supply and sewage disposal facilities conform to standards of design and safety adopted by the county's department of public health.

A report on soil percolation tests by a "qualified registered professional engineer" was required to accompany plats if individual sewage disposal systems were to be used. However, the ordinance did not call for the review of such reports by the public health department, although an interdepartmental arrangement

was made whereby the department does review these reports for the county map officer.

Leland is of the opinion that it is not realistic to ask developers to submit results of percolation tests when these results determine whether a plat is accepted or a building permit issued. He felt that health department sanitary engineers and sanitarians should run all percolation tests. But many agencies other than the county department of public health are concerned with sewage problems in Cook County.

Recommendations

In 1946, the Public Health Service recommended that water supply and sewage disposal activities in the unincorporated areas of the county be transferred to the county department of public health. No action has been taken on this proposal to date, according to Leland.

A recommendation to the Cook County Board of Commissioners that only lots of 20,000 sq. ft. minimum size be allowed septic tank systems was opposed by builders who argued for consideration of each area on its own merits. This recommendation was not adopted, but the board of commissioners decided to call a hearing at which experts were to present facts on the problem.

As a result of this hearing, a special committee was appointed in 1955 to review the entire situation and to submit legislative recommendations. In addition, several county commissioners made personal investigations and decided emergency action was needed.

All these and other recent activities have successfully induced developers to consider the installation of public sanitary sewers systems with connections to an interceptor sewer or to a community sewage treatment works. Consulting engineers are developing cost data for such facilities which they claim can be installed in average sized subdivisions for a gross cost not greater than the combined cost of individual systems.

Radiological Health . . .

State-Local Help Needed In Radiation Protection

State and local health departments have a wide area of responsibility in radiological health, asserted Miriam Sachs, M.D., chief of the bureau of adult and occupational health, New Jersey State Department of Health, Trenton.

The Atomic Energy Commission's radiation protection system includes strict regulations governing reactor-produced radioisotopes, but the commission does not control X-ray machines, fluoroscopes, naturally occurring radioactive materials, or most nonreactor-produced radioisotopes, she explained.

In recent years, the use of X-radiation and natural sources of gamma radiation, as well as the availability of atomic-pile-produced radioisotopes, has increased, she declared. In many industrial plants, research laboratories, and hospitals the total exposure to radiation includes radiations from X-ray machines, radium, and manmade radioisotopes.

Sachs pointed out that although radiation sources are potential hazards they need not be serious in practical use. Radiation protection, she emphasized, should be thought of not as prohibition of use but as encouragement of use with proper precautions based on respect for possible injurious effects.

Every well-organized health department has the facilities and personnel to begin a radiological health program, Sachs maintained. She urged the experienced public health practitioner not to be deterred by the complexity of nuclear physics from applying his skills to the management of ionizing radiations.

The basic epidemiological concepts of agent, host, and environment can be adapted to the problems of radiological health, she stated. Providing expert guidance are the recommendations of the National Committee on Radiation Protection, which are available in National Bureau of Standards handbooks. These cover technical procedures for measuring radiation, methods for protection against it, and permissible exposures.

As a nucleus for a radiological health team, Sachs suggested the following: a physician from the tuberculosis or cancer control program or the occupational health group, an industrial hygiene engineer, and a sanitary engineer. Short training courses will greatly assist in bringing the radiation team to top efficiency, she stated.

The Environment

Control of the environment, Sachs said, is the most fruitful field of endeavor in protecting against harmful effects of radiation.

Shielding, restriction of exposure time, distance, containment, adequate ventilation, proper disposal of radioactive wastes, and protective clothing and equipment are effective barriers to agent-host interaction, she noted.

The availability of these measures, however, does not guarantee that they are always employed in the manner and to the extent necessary to provide full protection, Sachs stated. It is her opinion that some community agency must provide radiation users with the advice and encouragement needed to conserve the public health.

So far, it does not seem possible to alter the host, as by an immunizing process, although in some instances the host can be selected. Sachs remarked that a careful medical history, blood counts, and physi-

cal examination enable us to choose a host who is not unduly susceptible to radiation injury. But such selection is possible, of course, only for persons to be employed in industry or occupied with research, diagnosis, and treatment, not to the public, she pointed out.

Rapidly growing tissues, as in infants and young children, may be especially susceptible to ionizing radiation. Sachs mentioned a study of 1,400 infants who had received X-ray therapy to the thymus gland. In 17, she stated, malignant neoplasia is known to have developed, including 7 cases of leukemia and 6 of carcinoma of the thyroid, a significantly higher incidence than was found among the untreated siblings of the irradiated children or in the general population.

Study Ground Storage Of Radioactive Wastes

Ground disposition may prove to be a feasible method of storing high-level radioactive wastes, according to Roy J. Morton, C.E., and Edward G. Struxness, B.S., leaders of the Waste Research Project, Health Physics Division, Oak Ridge National Laboratory.

Geologists, they pointed out, have suggested that this country has containment formations where ground disposition may prove to be possible. Among the formations mentioned are salt formations in Michigan and Kansas, along the Gulf Coast, and in southwestern United States; regional aquifers in middle and southwestern United States; structural troughs in eastern United States; and closed valleys in western United States.

To emphasize the potential magnitude of the radioactive waste problem, Morton and Struxness reviewed the prospects of future development of nuclear energy for power and other peacetime uses. One estimate, they said, indicates that by the year 2000 there may be nuclear power plants equivalent to more than 400 times the announced capacity of the reactor now under construction at Shippingport, Pa. The development of a nuclear power industry will be greatly influenced by the ability to manage its radioactive wastes safely and economically.

Concept of Ground Disposition

Ground disposition of radioactive wastes, Morton and Struxness explained, would utilize the property of soils to adsorb or exchange ions from solutions in contact with them. The volume of soil in most locations presents a great potential capacity for adsorption.

Shallow ground pits of suitable design and location may be safer waste receptacles than structural tanks, they asserted, since soils tend to resist accidental disruption and dispersal and to retain the radioactive materials adsorbed.

Two types of waste pits being considered were described: one would provide complete retention; the other would provide partial retention and controlled seepage.

For complete retention, they specified, the pit must be located in an impervious soil. Unless the soil is naturally impervious, the pit must be lined or the surrounding soil treated. The liner must be chemically resistant, radioresistant, temperature stable, and economical. In addition, measures would have to be taken to immobilize the mass of waste material within the pit.

An ideal arrangement for partial retention and seepage would be one in which all the radioactive materials were removed from the waste solution and fixed to the soil as the solution passes through the first few inches or feet of the pit wall and bottom, they stated. However, modifications of this arrangement are possibilities: for example, a pervious liner which has a high exchange capacity for the more critical radioisotopes in the wastes.

ORNL's Disposal System

Morton and Struxness gave the following information on existing and proposed features of the Oak Ridge National Laboratory's waste disposal system, which includes the use of local ground areas, particularly the Conasauga shale formation:

Low-level wastes: Sludge from a treatment plant which will partially decontaminate the wastes by coagulation and water-softening processes will be placed in waste pits located in the shale formation and within the controlled area of ORNL.

Intermediate-level wastes: Three waste pits, located in the weathered Conasauga shale overburden, have received about 2 million gallons of salted, highly alkaline liquid wastes containing about 27,000 curies of beta activity. Sampling and radiologging wells, used for monitoring, have shown that radioactive ruthenium and stable NO_3^- pass through the shale formation. No evidence of radioactive cesium or any other radioactive cations has been observed in the 4 years the pits have been in use. The observed underground movement of wastes has corresponded with geologic and hydrologic findings of groundwater flow in the area.

High-level wastes: To develop and demonstrate ground storage methods for reactor process effluents and similar high-level liquid wastes, definitive studies of the technical factors involved are being made and available knowledge and criteria are being applied. Field and laboratory studies include: (*a*) geologic mapping, test drilling, pressure testing, and pump testing to determine the physical properties of the soil and rock underlying the area; (*b*) the possibility of incorporating fission products into an insoluble ceramic mass; (*c*) the feasibility and effectiveness of various asphaltic and mineral pit liner materials; and (*d*) methods of pretreating wastes to make them less hazardous, including chemical processes which show promise for removing critical nuclides from acid and highly salted solutions.

Before pit storage can be applied directly to high-level wastes at ORNL, many additional studies are necessary, the scientists stated.

They mentioned these: (*a*) the effects of interactions between soil and waste material, (*b*) the movement of critical nuclides through various soil formations, (*c*) the effects of high concentrations of stable salts on the ability of the soil to retain nuclides, and (*d*) the underground flow pattern of waste solutions as compared with groundwater flow.

The management of radioactive wastes may well prove to be one of the limiting factors in achieving optimum benefits from the general usage of nuclear energy, Morton and Struxness emphasized in conclusion. Helping to find rational solutions to the problems of radioactive wastes, they said, is a challenge to the sanitary engineer. He must gain an acquaintance with principles of nuclear phenomena and with the techniques of radiation monitoring and control. With regard to ground storage of radioactive wastes, he should arrive at decisions based on an understanding of the hazards and a thorough knowledge of the scientific bases for particular proposals.

Links Radiation of Thymus To Thyroid Cancer

Indications that thyroid cancer in childhood may be associated with exposure to radiation in infancy were tentatively suggested in a study reported by C. Lenore Simpson, M.D., M.A., associate cancer research pathologist, Roswell Park Memorial Institute, Buffalo, N. Y.

This study was instigated to determine the effects of radiation in later life. Infants who received radiation to the thymus gland would be a good group for preliminary study since these children have a long life expectancy and records of X-ray treatment are readily available, Simpson said.

Accordingly, the medical histories of 1,722 children who had received radiation to the thymus between 2 and 27 years previous to the study provided the basis for this research. She stressed that the findings thus far are all tentative.

The names of the children were obtained from the records of both hospital and private practices. Data were collected by a questionnaire sent to the parents and were supplemented by information obtained from doctors, hospitals, and State cancer records, Simpson said. Most of the children are from New York State.

Occasionally, children were interviewed personally. All available pathological reports and slides were seen. Of the original group, 1,502 were traced and information was obtained concerning 1,933 of their untreated siblings, Simpson reported.

Simpson said that the children had been treated for a variety of reasons. In some cases, thymic enlargement was suspected, and in others routine fluoroscopy of X-ray was carried out to exclude thymic enlargement either after birth or by a pediatrician attending the child later.

In many instances, Simpson related, it was not known which reason was involved in the treatment of each particular child. Generally, she said, it was assumed that the majority of these children were thought by some physician to have an enlarged thymus.

Incidence

This study indicates, Simpson said, that the incidence of neoplasia is high among children receiving radiation to the thymus. Untreated children with enlarged thymus glands diagnosed by the same criteria would have been the preferable control group. Since this was not possible, the treated children were compared with their own untreated siblings and with the general population.

She also compared different subgroups in the study. The 220 untraced children were included in the calculations as being alive and well. The calculations, Simpson stated, have been based on the years at risk of each child and on the age- and sex-specific incidence rates of the disease. For the general population, the 1949–51 cancer incidence rates for New York State were used, Simpson said.

In comparison with untreated children and their untreated siblings, the treated patients have a relatively high incidence of leukemia and of thyroid disease. The siblings, in the absence of known thymic enlargement and radiation, were considered, Simpson said, a good control group from the point of view of heredity and environment.

Groupings

The study group was divided into six subgroups that represent the different sources of material. The differences in the incidence of tumors among the subgroups was studied and it was concluded that the large number of cases in one of these subgroups was not related to "chance," Simpson said.

The type of treatment in this subgroup differed considerably from that of the other subgroups and it was hoped that this might help to determine whether or not the increase in incidence was due to radiation. At the time of this comparison there were so many variables, Simpson said, that only a tentative conclusion was reached.

Analysis of the treatments was difficult throughout the study, Simpson related. The dose received by the majority of the children was estimated in roentgens. The children in the previously mentioned subgroup received more roentgens than those of the other subgroups; they were also treated with larger ports than those in any other subgroup, and the treatments were at intervals of 2 weeks instead of at 1 to 2 days as they were in the other subgroups.

The relatively small number of neoplasia cases throughout the entire study precluded a definite conclusion. However, it was significant that no thyroid nodules occurred in children who received less than 200 roentgens, Simpson said, whereas, leukemia cases were broadly distributed among the dose range and subgroups.

Milk, Fish, Fruit Juice Tests . . .

Not All Juice Coliforms Stem From Processing

Coliform bacteria in frozen concentrated orange juice are not necessarily an indication of direct contamination, stated E. R. Wolford, B.S., bacteriologist, Western Utilization Research Branch, United States Department of Agriculture, Puyallup, Wash.

Despite the best possible sanitary practice during production, these organisms will occur occasionally, he said. Nevertheless, millions of gallons of frozen orange juice have been consumed since 1946 without any enteric infection reported.

The presence of *Escherichia coli* in concentrated orange juice should not be condoned, Wolford emphasized, but "to condemn the product on the basis of water standards or carbonated beverage standards could deprive the public of a wholesome, essential food."

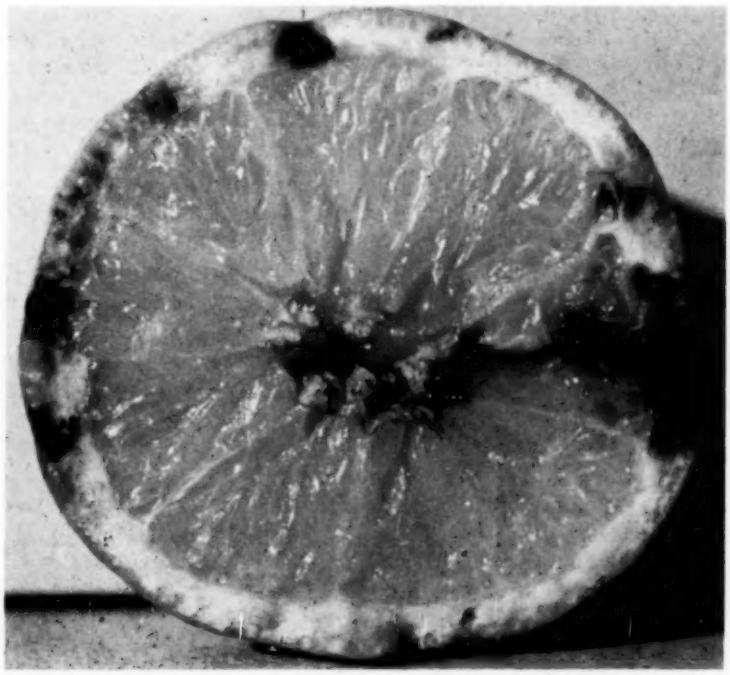
Coliform Sources

Reporting on his investigations into the sources and possible significance of coliforms in citrus fruit products, Wolford said that apparently some coliforms are present among the normal flora in orange groves. The fruit examined in the study was picked aseptically into sterile bags or was transferred to sterile bags from field boxes and conveyors by the use of sterilized tongs. The bags were closed and stapled and remained so until they were opened in the laboratory. Nevertheless, *Aerobacter* was found on seven samples of oranges, some of which were grown in groves where no organic fertilizer had been used for 3 years. *E. coli* was found in a sample of fruit from a grove which had been fertilized with barnyard fertilizer shortly before the fruit was picked.

Packinghouse wash-tank solutions may be one of the principal sources of coliforms in frozen orange juice products, Wolford continued. These solutions may contain many coliforms, including *E. coli*, he said, and, although all oranges used for juice are rewashed at the concentrate plant, fruit with breaks in the peel, particularly weak fruit picked late in the season, may have absorbed some of the contaminated solution at the packinghouse (see photograph). Most packinghouses use these solutions more than once. In some, they are changed once a week; in others, once a season.

Procedures for cleaning fruit also differ among packinghouses. Some houses use a single tank containing both soap and borates, borates only, or soap only; others use two tanks, one containing soap solution and the other containing borates, caustics, or hypochlorite solution.

In the concentrate plants, Wolford said, coliforms were most frequently found on equipment on which decaying orange tissue had been allowed to accumulate. Coliform-positive juice and concentrate were apparently associated with the condition of the fruit itself rather than with insanitary conditions in processing, he concluded.



Penetration of dye solution into orange, indicating how wash-tank solutions can enter through breaks in rind.

Enterococci Best Indicators In Frozen Fish Tests

Use of fecal streptococci to indicate the bacterial content of frozen fish and fish products was advocated by three faculty members of the department of bacteriology and public health, University of Massachusetts.

The testing procedures for the isolation of fecal streptococci are simpler than those using coliform bacteria as indicators, and the results are more significant, they found.

Conducting the study were Edward P. Larkin, Ph.D., instructor, Warren Litsky, Ph.D., associate research

professor, and James E. Fuller, Ph.D., research professor, in the department.

Lack of a dependable test organism and lack of standardized methods of isolation have handicapped the food industry and health agencies in the scrutiny of frozen food products, they indicated.

Comparison of the coliform bacteria and fecal streptococcus techniques was made on 80 samples of commercially packed fish and fish products, purchased from stores in several western Massachusetts cities. Seventy-five of the samples had been precooked; the rest were raw.

For the 20 fish stick samples examined, the MPN index of coliform bacteria in lactose broth ranged from 0 to 230. Most of the samples showed MPN values of less than 20. In the confirmatory brilliant green lactose bile (BGB), the values ranged from 0 to 130, most of the samples showing a zero value. The MPN values of fecal streptococci in ethyl violet azide broth ranged from 20 to 16,000 for the same samples, with most of the values more than 500.

Eighteen samples of scallops showed a similar picture. The MPN values for coliform bacteria in lactose broth ranged from 0 to 330; in BGB, from 0 to 130; and on eosin methylene blue, from 0 to 2,400.

Similar results were obtained with codfish cakes, ocean perch, crab cakes, seafood dinner, fried clams, haddock, shrimp, and lobster. Fecal streptococci were present in most of the samples, the MPN values ranging from 0 to 24,000.

Total plate counts, made on tryptone glucose extract agar, were of little value in the examination of frozen fish products, they found. Only in cases of gross bacterial contamination were the plate counts sufficiently high to cause concern. Most of the fish products tested had bacteria counts of less than 3,000 per gram, they reported.

Hand Blending Adequate

In blending the samples, the effectiveness of shaking the material by hand was compared with Waring Blendor results, a more time-consuming process recommended in tentative standard methods.

Disintegration of the materials in a blendor gave more accurate results than those obtained by the hand methods. The mechanical method, they concluded, should be used when accurate estimates of bacterial numbers are desirable, but the hand method is adequate for routine testing, and better than not testing at all.

Larkin and associates concluded that the high incidence of fecal streptococci on frozen fish products, possibly attributable to breading, should make the organism easy to isolate. In addition, these organisms, although they can be eliminated by proper food processing, are somewhat resistant to heat. Consequently, they should be a more dependable indication of inadequate processing than more heat labile organisms.

Antibiotic Residual in Milk Detected More Precisely

A modification of the standard method for detecting lower level antibiotic residuals in milk was offered by Robert L. Morris, M.S., and Josephine Cerny, chief and associate chemist, respectively, of the Iowa State Hygienic Laboratory, Iowa City.

Economic losses to the dairy farmer resulting from acute and chronic mastitis in his herds have stimulated widespread use of antibiotics and better sanitation and handling practices, they said, in pointing out there has been a resulting improvement in the quality of milk as well as a reduction in the incidence of mastitis. Proper laboratory and field controls can assure antibiotic free milk, they maintained.

Morris and Cerny stressed that there is some medical opinion that continued use of low-level antibiotic residuals in milk and other foods can result in resistances and possible allergies in the consumer, and impair the use of antibiotics against infections.

The bacterial inhibitory influence of antibiotics at the levels detected by this test casts considerable suspicion on the authenticity of standard plate counts obtained on milk samples containing demonstrable antibiotic residuals, they stated.

Morris and Cerny found that antibiotic residual tests using the technique described in the Standard Methods for the Examination of Dairy Products, 10th edition, gave nonprecise, low-level results and sensitivities to only 0.1 unit of penicillin per ml., a level which reportedly appreciably retards acid production in the manufacture of cheese. Such lack of precision in the lower levels of the standard methods test, they said, limited its value.

The modification of the antibiotic residual test consists mainly of the use of 2 one-half inch filter paper discs instead of a one-fourth inch disc.

The new double disc method is sensitive and precise to at least 0.01 unit of penicillin per ml., while the one-fourth of an inch disc procedure loses precision below 0.1 unit per ml., they observed. Penicillin ointment was used for this test.

Morris and Cerny observed that the double discs absorb about 10 times the milk volume as compared to the one-fourth of an inch discs, a factor they believed largely responsible for the greater precision. Also, it is reasonable to assume, they said, that the top disc deters evaporation of the absorbed milk and allows more complete diffusion of the sample into the agar.

They found that the large-disc modification is quite sensitive to other antibiotics and readily detects their presence in the low concentrations.

The double disc test is sensitive to low concentration levels of seven different commercially available bovine mastitis antibiotics containing such

materials as penicillin, aureomycin, terramycin, streptomycin, polymyxin B, neomycin, bacitracin, and sulfa combinations, they said. However, this test is not specific for individual antibiotics.

Experiments show that this disc assay method is sensitive to quaternary ammonium compounds only above 50 p.p.m., a level extremely unlikely in field practice, Morris and his co-worker said. Also numerous tests to show precision of negative results on antibiotic free milk were 100-percent effective.

Undoubtedly, Morris and Cerny said, the occurrence of inhibitory characteristics is more frequent in pasteurized milk from areas where antibiotics are used for mastitis reduction without rigid laboratory and field programs.

Water Quality Tests . . .

Microscope Reveals Water Quality

Quick appraisal of certain water characteristics through microscopic determination of the quality and quantity of biota in samples was proposed by James B. Lackey, Ph.D., professor of sanitary science, University of Florida, Gainesville, Fla.

New emphasis has been placed on the simplicity of this method, according to Lackey, by the 10th edition of Standard Methods for the Examination of Water, Sewage and Industrial Wastes. Though only strong indications rather than positive and detailed information of the quality of the water as a health hazard are given by such a procedure, pertinent data on the general condition and corrective treatment requirements of the water are revealed.

Although the microscope method is unsatisfactory for the determination of pathogenic bacteria or parasites, it does not necessitate waiting for cultures to develop and is especially suitable for investigating the utility of nonpotable waters.

In addition, preparation and concentration of samples is relatively simple. About 500 ml. is collected and transported from the source in chilled, nontoxic containers. Most indicator organisms in such samples can be identified in the living state or after killing with a preservative such as formalin.

Lackey preferred centrifuging 5 minutes at 2,000–2,400 r.p.m. to filtering for concentration. The amount of supernatant discarded should vary inversely with the abundance of organisms in the sample. He went on to describe the "drop method" of counting as set forth in the standard methods manual.

Telltale Biota

Indicator organisms are simply listed as ciliates, green flagellates, and so on as they are met, then tabulated. "Generally speaking," Lackey said, "those organisms most favored by a given environment will be most numerous, while those adapted to the widest environmental range will occur in the greatest number of samples." The organisms found in greatest number probably represent a response to some particular characteristic of the environment.

If plankton content is high or consists largely of diatoms, it is a signal that filtration will be difficult, Lackey said. Measures for reducing unpleasant odors or tastes and boiler water slime depend upon the kinds and numbers of organisms present. Some specific trade wastes may be recognized by the microscope method.

A fairly long list with few of any particular kind of colored algae, colorless protozoa, worms, rotifers, and other organisms suggests a low biochemical oxygen demand, a low nutritive threshold, and an inorganic substrate. In such a condition, there are enough bacteria to support low numbers of ciliates and flagellates and enough nitrates and phosphates to support a small but varied chlorophyll-bearing population.

Blooms

A large population of diatoms and green plankton algae with a scattering of Euglenophyceae and colored dinoflagellates often means a substantial phosphate and nitrate content, he said. Should these concentrations exceed 0.015 and 0.2 p.p.m., respectively, the green organisms may "bloom," that is, exceed 500 per milliliter. Such blooms may clog filters and affect taste and odor.

If additional organisms such as blue-green algae are added to the bloom, the biochemical oxygen demand increases and filter and odor or taste problems may become acute, said Lackey. Other undesirable effects are implied by extreme blooms, such as restrictions on the development of species other than the species chiefly responsible for the bloom. Lackey said it was highly probable that the poisoning of fish, shellfish, and crustaceans by the marine "red tide" of the Florida coast is a result of an extreme bloom.

Other Indicators

If the sample contains a scant number of organisms and a preponderance of no specific type, the water contains a low mineral content and virtually no organic matter. If the water is barren, Lackey said, it might indicate the presence of toxic substances.

Predominance of anaerobic flagellates such as *Tetramitus* is a sure indication of a high organic content and no dissolved oxygen. The same, with inorganic salts, is implied by predominance of anaerobic green forms such as *Chlorogonium* and

certain *Euglena*. An excessive number of ciliates, he said, indicates a high bacterial population, which in turn means organic contamination.

Examination of slides at a magnification of about 430 diameters also points to the speed and stage of oxidation of organic matter to inorganic ions in the water. Large numbers of free living bacteria and *Zooglea ramigera* respectively denote initial and active stages of oxidation; fewer bacteria but many green flagellates and some ciliates, oxidation nearly complete; and great quantities of nonflagellated green algae with some ciliates and stalked bacteria, complete mineralization.

In concluding, Lackey emphasized the need for caution in interpreting such data in view of the lack of information on the ecology of many micro-organisms.

Problem of Fluid Samples Solved by New MF Test

A delayed incubation procedure, using the membrane filter, was suggested by four Public Health Service bacteriologists for examining the coliform content of water when shipment of refrigerated fluid samples is impossible or impractical.

Many laboratories serving large geographic areas have been unable to comply with the recommended 12-hour limit for commencing bacteriological examination of relatively pure water samples, maintained between 6° and 10° C., they explained.

Reporting the procedure and the trial results were Edwin E. Geldreich, M.S., Paul W. Kabler, M.D., Ph.D., Harold L. Jeter, M.A., and Harold F. Clark, M.A., all with Water Supply and Water Pollution Control Research, Robert A. Taft Sanitary Engineering Center.

The new procedure permits the bacterial examination to begin at the time of collection, they reported.

An appropriate quantity of water is filtered through the membrane at the sample collection site, and the membrane is placed on a preservative medium. The individual petri dishes are wrapped in Parafilm to minimize evaporation and are shipped, unrefrigerated, to a laboratory for completion of the bacterial examination.

Isolating the organisms on a solid surface removes the possibility of coliform increases by cellular multiplication, and each cell theoretically becomes a countable colony, they said. Other advantages named were decreased weight per sample, small size, low cost of sample container, and transportation to the laboratory by first class or air mail without refrigeration.

Test Results

In testing the new procedure, coliform densities in water samples estimated after storage on the MF preservative medium at room temperature (13° to 32° C.), and at 35° C. for 24, 48, and 72 hours were compared with the standard methods MPN determinations on liquid samples stored at 5° C., 13° to 32° C., and 35° C. for the same time periods. Both were compared with results from an initial 5-tube, 3-dilution MPN test.

Samples were taken from 6 sources, 3 rivers, 2 farm wells, and a lake. Three samples from each source were examined in a winter and a summer series.

The preserved MF coliform counts at room temperature, they found, indicated good agreement with the MPN densities in liquid samples stored for 24 hours at 5° C., but they tended to be lower than the initial MPN.

The preserved MF results at room temperature and at 35° C. were superior to the MPN procedures on liquid samples stored more than 24 hours at the same ambient temperatures, they reported.

The MPN coliform counts on liquid samples held at 5° C. for periods up to 72 hours were quite variable, they said, but they more closely approximated the initial MPN results than those for samples stored at the higher temperatures.

Baltimore Coliform Count Uses Geometric Mean

The geometric mean is a more accurate measure of the density of coliform organisms in water supplies and streams than the arithmetic mean, or average of daily counts, stated Edward S. Hopkins, consulting sanitary engineer, and Karl H. Schamberger, principal associate engineer, bureau of water supply, Baltimore, Md.

Hopkins and Schamberger said that one or two extremely high daily counts reported during a month distort the arithmetic mean so that it does not represent general conditions for the period. Zero and a count of millions have equal weight in computing an average, they pointed out. The average, then, is not a true measure of central tendency, they said. They defined "central tendency" as "a single measure that is representative of a group of measures." This single measure could be the median, the geometric mean, or the arithmetic mean.

When bacterial counts are normally distributed, the arithmetic mean will give an unbiased estimate of coliform density and minimum variance, but one or two very high or very low counts will distort this figure so that it will not accurately represent general conditions and may give a value which is misleading, Hopkins and Schamberger said.

The geometric mean, or average of logarithmic values, on the other hand, equalizes high and low measures and is a precise measure of central tendency, they stated.

A Simple Method

Most water purification plants report daily coliform density and a monthly average of the daily figures. It would not be difficult to add to the report form a column showing the logarithmic value of the daily counts and to show the average of these values, or the geometric mean, in another column following the monthly average and its logarithmic value. This would provide a more uniform relationship between data from the same stream or data from various

sources and an unbiased estimate of coliform density, Hopkins and Schamberger said.

In conclusion, they stated that "the introduction of this new mathematical manipulation in existing water report procedures would not be burdensome and the relatively simple method of establishing the central tendency density would justify its use." They were also of the opinion this procedure should be included in the Manual of Recommended Water Sanitation Practice.

Vital Statistics . . .

Suggests New Terminology For Causes of Death

Rewording death certificate forms so that physicians will be encouraged to report diseases rather than to indicate a single "cause" of death for statistical tabulation was the recommendation of Alan E. Treloar, Ph.D., professor of biostatistics, School of Public Health, University of Minnesota, Minneapolis.

Treloar suggested that a new and more meaningful term be used on the form, such as "terminal morbidity states" or "conterminous morbidity." The physician could, if he chose, indicate by an underline the condition or disease which he wished to emphasize.

Rates defining proportionate morbidity at time of death and expressing the number of cases of each disease state as a proportion of all deaths would be more informative and would cover disease conditions preceding death more completely than the presently used rate based on a specific cause, Treloar continued.

The prime interest of pubic health workers is in morbidity; their responsibilities require them to know as much as possible about the total morbidity picture in their communities, Treloar stated.

It is "our challenge to action; mortality is merely a measure of our defeat. Medical certification of cause of death is helpful in determining morbidity but as yet even the best mortality records give only a grossly biased sample of morbidity conditions in a total community," he said. If complete morbidity data for each community were readily available, "our interest in cause of death certification would surely vanish," he stated.

Selecting the Cause

The selection of one disease or condition as the primary cause of death is an arbitrary act and is influenced by the viewpoint of the person making the selection, Treloar said. The vital statistician will seek a specific cause for statistical tabulation; each national society will contend for the assignment of each death to its particular category to add weight to its plea for funds; the lawyer will be interested in the legal aspects of death; and the insurance executive will consider the obligations of his company.

Clinical vs. Autopsy Findings

Treloar suggested that a specified cause is only one of infinite numbers of members of causal systems and that the so-called cause of death may be only one of many factors. For example, when death results from a chronic disease, the apparently clear-cut syndrome of clinical symptoms which give the internist confidence in assigning the cause of death do not always agree with the autopsy findings. The pathologist would often insist on some other entry on the death certificate if it were not already completed and filed, Treloar said.

The death of a man immediately following an automobile accident may be certified as an accidental death, although from the health worker's point of view, the accident may have been only incidental to the diseased condition of the heart designated by the pathologist as the primary cause of death, Treloar stated.

In addition, the pathologist may find that the man had cancer of the bladder which would undoubtedly have resulted in death in a very short time unless discovered and treated, and the man may have had arrested tuberculosis also, which was not a factor in the death and therefore was overlooked.

The record of this death could quite justifiably be claimed by several societies, Treloar said. The body is not only part of the wreckage of an accident, it is also "mute testimony to the wastage of rheumatic fever and heart disease, tuberculosis and cancer," all of which have contributed to the morbidity knowledge we seek.

Lowest Total Death Rate Found in Suburbs

Residents of metropolitan rural areas have a lower total death rate, on the whole, than the population of urban or nonmetropolitan rural areas, although the mortality experiences of different age groups vary.

Although they enjoy the most favorable mortality experience, suburbanites of the metropolitan rural counties, combining the advantages of urban and rural life, lose their advantage by middle life. Factors related in some way to the urban aspects of their lives seems responsible for this shift.

These inferences were drawn from a 1949–51 study of differential mortality according to the degree of urbanization in New York State (exclusive of New York City). The findings were reported by Elizabeth Parkhurst, M.S., biostatistician, New York State Department of Health,

Albany, N. Y. The United States Census Bureau's identification of metropolitan districts, associated with towns of 50,000 or more, was used to distinguish metropolitan from nonmetropolitan areas.

Parkhurst said the study indicated that "the large cities appear to have evolved an environment into which children are born and grow up at no disadvantage, and even at some advantage to their rural cousins. The mortality experience of the adult population, however, is far less favorable in the cities than in the rural areas, and more so in the metropolitan than in the nonmetropolitan cities."

In rural areas, the death rate from accidents among males aged 5–14 and 15–24 years (one-half and two-thirds, respectively, of deaths from all causes) accounts for much of the metropolitan advantage.

Young Adults

In the metropolitan rural areas mortality among young persons aged 15–24 is higher than in the cities. This may be attributed to the migration of many young persons, particularly young women, from suburban and rural areas to the cities, Parkhurst stated. Since those who are ill remain at home, this factor may account for the higher death rate for females in this age group in areas outside large cities, she said.

In suburban areas, the death rates, particularly among males, are lower than in central cities, Parkhurst said. This is probably due, not only to the higher standard of living in the suburbs, but also to the fact that the suburban population is made up of men with families. Married men as a group have a much lower death rate than the single, the widowed, and the divorced, who usually live in cities, she noted.

Older Adults

For women between the ages of 45 and 75 and for men between the ages of 55 and 75, death rates are higher

Resident death rates per 1,000 population in metrop olitan and nonmetropolitan urban and rural areas, New York State exclusive of New York City, by sex and age, 1949–51

Sex and age	New York State exclusive of New York City	Metropolitan areas				Nonmetropolitan areas		
		Total	Central cities	Other places 10,000 and over	Places under 10,000	Total	Places 10,000 and over	Places under 10,000
Total, both sexes, adjusted [1]	8.4	8.7	9.4	8.7	8.0	8.5	9.0	8.4
Males								
Total, adjusted [1]	9.6	10.0	11.0	10.0	9.0	9.7	10.4	9.4
Under 5 years	6.8	6.5	7.4	6.5	5.9	7.3	7.6	7.2
5–14	.7	.6	.6	.5	.6	.8	.7	.8
15–24	1.4	1.3	1.1	1.3	1.4	1.6	1.2	1.7
25–34	1.7	1.6	1.7	1.8	1.4	1.9	1.7	2.0
35–44	3.6	3.7	4.6	3.7	3.1	3.7	4.0	3.5
45–54	9.9	10.3	12.4	9.9	8.8	9.7	11.0	9.2
55–64	24.0	25.5	28.5	24.6	22.9	23.1	26.3	21.8
65–74	51.4	54.0	57.7	54.9	49.7	51.2	56.4	49.3
75 years and over	123.9	127.5	134.2	131.6	119.8	127.7	127.5	127.8
Females								
Total, adjusted [1]	7.3	7.5	7.9	7.5	7.0	7.4	7.6	7.3
Under 5 years	5.3	5.0	5.8	4.7	4.6	5.8	5.9	5.8
5–14	.4	.4	.4	.4	.4	.4	.5	.4
15–24	.7	.6	.6	.6	.6	.7	.6	.8
25–34	1.1	1.1	1.2	1.3	.9	1.2	1.1	1.2
35–44	2.5	2.5	2.8	2.6	2.2	2.6	2.7	2.6
45–54	6.1	6.3	6.7	6.4	5.9	6.0	6.3	5.8
55–64	14.3	15.0	16.3	15.0	13.7	13.8	14.9	13.4
65–74	35.3	36.9	38.4	37.7	34.7	35.3	36.8	34.6
75 years and over	107.6	111.1	115.3	106.0	109.2	112.0	112.0	112.0

[1] Standardized, by direct method, to the age distribution of the population of New York State in the census of 1940.

Resident death rates per 1,000 population by sex and age in the urban and rural subdivisions of counties suburban to New York City, and of the total of all other metropolitan areas of New York State, exclusive of New York City, 1949–51

Sex and age	Nassau, Rockland, Suffolk, and Westchester Counties		Upstate metropolitan areas		
	Places 10,000 and over	Places under 10,000	Central cities	Other places 10,000 and over	Places under 10,000
Total, both sexes, adjusted	8.4	8.2	9.4	9.3	7.9
Males					
Total, adjusted	9.7	9.3	11.0	10.6	8.8
Under 5 years	6.2	5.5	7.4	7.1	6.4
5–14	.6	.5	.6	.5	.6
15–24	1.3	1.2	1.1	1.1	1.5
25–34	1.8	1.4	1.7	1.8	1.4
35–44	3.5	3.3	4.6	4.2	2.9
45–54	9.4	9.1	12.4	11.3	8.4
55–64	23.5	24.6	28.5	26.9	21.3
65–74	53.9	51.9	57.7	57.0	47.7
75 years and over	129.1	118.7	134.2	137.4	120.6
Females					
Total, adjusted	7.2	7.2	7.9	8.0	6.9
Under 5 years	4.7	4.3	5.8	4.8	4.8
5–14	.4	.3	.4	.5	.4
15–24	.6	.6	.6	.7	.6
25–34	1.2	1.0	1.2	1.3	.9
35–44	2.6	2.4	2.8	2.7	2.0
45–54	6.2	5.9	6.7	7.1	5.8
55–64	14.4	14.0	16.3	16.2	13.4
65–74	36.5	34.7	38.4	40.6	34.7
75 years and over	103.2	112.4	115.3	113.6	106.4

in the metropolitan than in the nonmetropolitan rural areas, she stated.

Part of the excess mortality among older adults in the cities and suburbs may be due to higher death rates from arteriosclerotic heart disease, which were 31 percent higher in cities over 50,000 than in nonmetropolitan rural areas, Parkhurst said. However, this differential in the cause of death may reflect superior diagnosis of coronary disease in the cities, she concluded, since the death rate from all forms of heart disease was only 23 percent higher in cities over 50,000 than in nonmetropolitan rural areas and, from all cardiovascular diseases as a group, only 12 percent higher, because of lower rates for vascular lesions and nephritis.

Seeks Constructive Ideas For Mortality Studies

What are the specific needs not now being met that should be met by cause-of-death statistics?

It is high time that less attention is paid to what is wrong with cause-of-death statistics and more work devoted to constructive answers to this question, said Iwao Moriyama, Ph.D., chief, Mortality Analysis Section, National Office of Vital Statistics, Public Health Service.

Once the needs are determined and agreed upon, the next step will be to examine the elements that go into mortality statistics. It should be possible, he said, to alter one or more of the following: the basic medical information supplied by the physician, the method of reporting, the classification list of diseases, and the method of selecting causes to be tabulated.

The increase in public health importance of the chronic diseases is one reason for the growing indication of inadequacy in current mortality statistics, Moriyama implied. He pointed out that the traditional compilations, despite their limitations, have proved of value in the past when public health was concerned chiefly with infective diseases.

The nature of mortality data is one factor limiting the uses of mortality statistics, according to Moriyama. Cause-of-death statistics are descriptive of the illnesses and injuries of the population that has died, but they cannot serve as reliable indicators of morbidity unless the fatality rates for the different morbid conditions are known or are known not to vary greatly from time to time or place to place, he noted.

Moreover, the underlying cause of death—the basis for current compilations of mortality statistics—may be a disease or condition not present at the time of death. Hence, it is difficult to see how the concept of the underlying cause of death fits within the framework of any morbidity survey, he declared.

For the study of morbidity, Moriyama suggested that it may be useful to obtain information on all the diseases afflicting the deceased at the time of death, with some distinction between those associated with the death and those not associated.

Quality and Classification

Another limiting factor is inaccuracy in clinical diagnoses and in reporting causes of death. Mori-

yama cited several studies which he said have shown lack of agreement between causes of death based on clinical information and causes based on autopsy information, particularly for the so-called clinical diseases, such as hypertension and diabetes.

There is no question that there is room for improvement in the quality of medical certification, he admitted. However, he considers it "altogether unreasonable to expect absolute precision in diagnoses involved in death." The most that can be expected from cause-of-death statistics is that they reflect as accurately as possible the average current medical opinion based on all available information, he said.

The classification scheme, which largely determines how diseases are grouped and how much detail can be obtained, might be considered a third limiting factor, Moriyama indicated. Certain sections of the classification list are recognized as "not particularly satisfactory," he pointed out. With reference to the section on circulatory diseases, he urged more studies of the problem of the cardiovascular-renal diseases in preparation for the eighth revision of the International Lists in 1965.

A fourth factor definitely limiting the usefulness of mortality statistics is the method of classification. The underlying cause-of-death concept has had great utility, but not all needs for cause-of-death statistics are concerned with the underlying cause, he stated. For example, there are expressed needs for data that would describe a disease complex or the relationship between the diseases that led to death, and there is a need for information on the therapeutic misadventures and untoward effects of drugs.

Moriyama mentioned that experimental studies on the tabulation of multiple causes of death have been conducted, but that as yet little or no attention has been given to the uses and meanings of such tabulations.

Public Health Nursing . . .

Studies of Attitudes May Shape Training

Public health nurses, particularly those concerned with mental health, will have a valuable instrument in studies which interpret data pinpointing individual as well as group attitudes, in the opinion of Esther Lucile Brown, Ph.D., an executive of the Russell Sage Foundation, New York.

From such interpretive studies nurses may learn how attitudes can be altered for constructive purposes.

In her discussion of the contribution of the behavior sciences to understanding in public health nursing, Brown raised two fundamental questions:

How can understanding by the public health nurse of the patient and his needs, or the family or community and its needs be developed?

How can such understanding be used for therapy, prevention of mental as well as physical disease, and teaching of positive health?

The gains made in understanding the personality structure by psychiatry, psychology, and the social sciences have not yet been sufficient to equip the public health nurse entirely to meet problems arising in the treatment of persons who have different linguistic, social, and economic backgrounds, she said.

If the nurse is to view the patient in relation to his family or community matrix, much more must be known about how attitudes and patterns of behavior, the nurse's own included, are conditioned by educational, economic, religious, racial, national, and geographic backgrounds, Brown declared.

Recently, she reported, schools and organizations have become increasingly aware of the potential application in the health field of this type of knowledge. To this end, the Russell Sage Foundation, among other organizations and individual scientists, are trying to provide a literature designed for use by public health workers and by schools training health workers.

Specific to Situation

"The larger question remains," she went on, "of how the facts about social and cultural factors and their interpretation can be made specific enough for application in a wide variety of clinical or health-teaching situations throughout the country."

"What is needed," she said, "are data that furnish the worker with some immediate guide to attitudes toward sickness, medical personnel, clinics, hospitals, health as a positive goal, which may be expected in a particular type of patient, family or community; data that provide clues about how a relationship could be established that might otherwise be impossible."

Before literature of such dimensions is available, Brown said, years of collecting, analyzing, and interpreting of materials will be required. However, she pointed to important beginnings that have been made; for example, the current study of all patients using the comprehensive general clinic of the Denver General Hospital. One-third of the patients are of Mexican or Spanish-American descent. A sample of the clinic patients will be followed into their homes and community while a study of physician-patient relationship is conducted at the clinic through the medium of a oneway screen. This study may give some indications of the particular social and cultural factors significant in the therapeutic process, she said.

"Many of the persons whom public health nurses and social workers seek to serve are patients or clients being asked to move from narrow self-contained environments into a larger cultural milieu of which scientific health practices and elaborate treatment centers are a component," Brown stressed. "How can it be hoped that persons limited by educational or social experience or by prejudice, real or imagined, will be able to make such a move without putting a severe strain on their patterns of psychological adjustment and hence on their mental health?"

They will need help, Brown asserted, but help of a kind they can accept. The public health nurse is in a strategic position to give that help, she concluded.

Interpersonal Relationships

From the mental health viewpoint, current nurses' training programs do not facilitate optimal development of the skills and experiences essential to understanding of and proficiency in interpersonal processes, according to Stephen Fleck, M.D., associate professor of psychiatry and public health, Yale University School of Medicine, New Haven, Conn.

Fleck, in his contribution to the discussion, added that the public health nurse needs to discern and understand quickly the character of interpersonal relationships in groups of people, in addition to prompt recognition of individual maladjustment. Preparation for this must pervade the entire training program, undergraduate and graduate, Fleck said.

The role of the public health nurse in mental health is determined by administrative planning and action, according to Mary King Kneedler, R.N., B.S., M.A., chief of the public health nursing section of the North Carolina State Board of Health, Raleigh, N. C.

Kneedler stated that this includes the setting of objectives and the course of action; coordination of personnel within the agency and coordination of the program with that of other agencies involved in a mental health program; and staff education in the area of mental health.

Nurses Evaluate Own Role In Adult Home Program

Forty Kansas nurses expressed varying feelings about their part in the licensing of adult boarding homes and made a number of suggestions for improving the program, reported Lucille E. Tracy, R.N., B.S., director, public health nursing, Wichita-Sedgwick County Department of Public Health, Wichita, Kans. Tracy summarized representative replies to an opinion poll of 72 public health nurses, supervisors, and staff nurses as follows:

Favorable Effects

From the standpoint of care of the boarding home residents, the nurses felt that the licensing program had improved the safety of medication and other treatments.

Home administrators have learned the professional nurse's concept of nursing as the art of giving care and medications to the sick under medical supervision. Administrators have been taught to observe patients professionally and to improve the records of their observations.

They have also introduced additional safety measures such as hand rails in tubs and showers and on stairs.

Those in charge of patients have been helped to see emotional as well as physical needs of patients. More thought has been given to rehabilitation and more activity has been provided for residents.

The support from the local health agency has given administrators more confidence, an opportunity to discuss problems, and an awareness that others are interested in their work.

The area of supervision for nurses has been extended by this experience. They have gained insight into the problems of the aging, the nursing needs of elderly sick persons, and of the impact of family relationships and their effect on older persons. They have also learned what happens to elderly persons who have no family.

Nurses have increased their skills in teaching, writing reports, interviewing, and counseling and have applied safety measures in public health nursing. Working relationships between the health department and other welfare agencies have been improved. Opportunities for both group and individual teaching of nursing procedures and techniques have been ample.

The need for standards for nursing homes is gaining recognition and acceptance in the community. Also, local health and welfare departments have been given opportunities through this program to work together on improvement of mental health.

Unfavorable Effects

The licensing nurse represents an authoritative and judgmental figure to the nursing home administrator, who may find it difficult to recognize the nurse in a guidance role. A great deal of time and careful work is needed to change the administrator's viewpoint so that the public health nurse will be consulted and will be thought of as an ally and not as an investigator or law enforcement agent.

Acting as an evaluator is counter to the nurses' principle of accepting people as they are and of working on problems which they regard as of foremost importance. Overlapping of authority has created some confusion for both nurses and administrators. Some nurses are reluctant to work with welfare workers, and others feel that their evaluations are not given enough recognition by the State health department.

Suggestions for Improvement

Careful consideration should be given to the question of whether or not the nurse is serving in her best capacity when she acts as an evalu-

ator. If she is, she needs continued help to accept and fulfill that role.

Demonstration days, when administrators can show each other special rehabilitation techniques would be helpful.

Criteria should be developed to evaluate the mental capacity, ability, skill, and understanding of the prospective boarding home administrator.

More conferences are needed between agencies and administrators working on specific problems.

Presenting standards to the evaluators before they are presented to the administrators would help to eliminate many of the frustrations which develop when the standards are presented to the administrators.

When standards are adopted they should apply for a reasonable length of time.

All boarding homes should be licensed, including private boarding homes.

Kansas Nurses Participate In Adult Home Program

Public health nurses are taking an important part in the adult boarding home program in Kansas, but they still need help in adjusting to the role of evaluator, according to Roberta E. Foote, R.N., M.A., director, public health nursing, division of local health services, Kansas State Board of Health, Topeka, Kans.

When Kansas gave health departments an official part in licensing nursing homes in 1951, public health nurses were reluctant to participate in the program, Foote continued. They did not wish to be regarded as inspectors.

Nevertheless, the nurses believed that they should participate in formulating standards for care and treatment of ill or elderly persons, in helping operators of boarding homes care for their patients, and in evaluating services and structures, Foote stated. They also felt that it would be good nursing practice to care for and to champion the cause of elderly people who are helpless or ill and that, by visiting nursing and boarding homes, they could teach nursing procedures to the administrators. However, in describing their part in the program, they changed the word "inspection" to "evaluation."

Standards of Care

Although elderly and ill persons are only a small part of the Kansas population, they are helpless as individuals and have many physical handicaps. Public health nurses can do much to close the gap between knowing what should be done and what actually is done in caring for them, Foote asserted.

Nurses have always observed or "inspected" symptoms and environment and have learned to evaluate the work of students and staff in a cooperative and constructive spirit, and "we can and do evaluate the adult boarding homes in the same spirit," Foote said.

Many nurses are overcoming their fear and dislike of appearing as witnesses at formal hearings, she stated, although they do everything they can to prevent court hearings. They know that most administrators of boarding homes are as interested as the nurses in giving good care to the residents and, before court hearings are held, the nurses ask the licensing agency to arrange for informal conferences between the administrator and the licensing agency to find ways to help the administrator meet the agency's standards for the homes.

Concern for the improvement of standards of institutional care has increased in the past 10 years, Foote stated. Before 1947, only 4 of 46 States reported legislation on institutions for older people, whereas during 1947–50, 18 States passed this type of legislation.

At times it has seemed as if "the licensing programs were overshadowing everything else," but "the facts do not bear this out," Foote stated. It is estimated that in the agency having the largest number of homes under its supervision, the licensing program took only about 2 percent of the nurses' time and less than 2 percent of their visits. Lucille Tracy, of the Wichita-Sedgwick County Health Department, is the public health nursing director of this agency. Her summary of the opinion poll of public health nursing personnel precedes this presentation.

As a result of the licensing program, better teamwork has developed within the health department and between the health department and other agencies, she concluded.

New York Nurses Train To Lead Parent Groups

When the Child Study Association of America, at the request of health authorities, undertook to train 15 public health nurses as leaders of parent discussion groups, it embarked on pilot research which could influence the content of public health nursing education. Whether the findings have any bearing on nurses' training, said Aline B. Auerbach, depends on how extensively one defines the goals in nursing education.

Mrs. Auerbach, director of the association's leadership training department, described the experiment begun in March 1954 for the New York State Health Department with the sponsorship of the Children's Bureau of the Department of Health, Education, and Welfare.

The project consisted of 13 weeks' preliminary training in the content of parent group education and techniques of leadership, followed by work in the field under health department auspices and supervised by the association's staff.

A faculty representing the disciplines of psychiatry, research and clinical psychology, education, and cultural anthropology participated in the intensive training program of theory, observation, and group seminar work. A research advisory committee followed progress of the project and evaluated the responses of the nurses to the program. Trainees came from different cul-

tural backgrounds. All but three were staff level nurses.

Group Education

Leadership training focused on parent group education, the objective being to help parents become better parents rather than better group members. It is a complex method, Auerbach stated. Leadership cannot be acquired quickly or established by resorting to easy devices. The group leader develops the discussion from the experiences of the parents as they look at their family problems with their peers.

The decision to prepare nurses for the application of discussion methods to work first with parents of growing children, and only thereafter with expectant parents, was made to see whether they could acquire leadership skills more easily in an area in which they had not functioned before, Auerbach said. Once the nurses felt comfortable when using the newly developed techniques, they might apply them flexibly elsewhere, it was thought.

Because the program was a pilot study and because the training group was a small one, the results are only suggestive of what further research may find.

On the significance of the nursing program for nursing education—suggesting the possibility of changes in teaching methods, in selection of students, and in curriculums of nursing schools, Auerbach stated:

"The study suggests chiefly that these nurses were not as adequately prepared as might have been expected with regard to certain important aspects of child development and parent-child relationships which, certainly, pervade all phases of their work, whether they are working with parents in groups or seeing parents and/or children in clinic conferences or home visits."

The skills of parent group education based on the discussion method can be acquired, with special training, by public health nurses, but not all members of any professional group may be expected to lead groups with equal effectiveness, Auerbach remarked. As a professional group, nurses brought to this work certain assets and limitations, out of their general professional training. Vocationally, they are in a strategic position to serve as leaders of parent groups.

Assets, Liabilities

Among the assets cited by Auerbach were the following: thorough knowledge of certain phases of individual growth and family needs, particularly the physical side in health and in illness; sympathy for children's needs; close contact with the community's families; knowledge of community resources for personal and health services; some knowledge of the group discussion method; conscientious and responsible attitude toward acquiring new skills and toward using themselves in a disciplined, professional way; acceptance of supervision, including being observed in action.

Among the limitations, she listed: lack of sufficient knowledge in child growth and development and in family relations; insufficient knowledge of dynamics of behavior, individually and in groups; limited diagnostic awareness of pathology in child behavior and parental attitudes; little familiarity with cultural variations in child care attitudes and practices; little practical knowledge of group techniques; limited knowledge and acceptance of their active role in individual supervisory conferences.

She added that the findings did not throw any additional light on the selection of trainees although correlations of personality trends and performance ratings did indicate that the more authoritarian the nurse, the less effective her teaching by the group method. Auerbach also remarked that study is needed of intelligence levels, flexibility, emotional maturity, and other personality factors.

For new programs of this type to be effective, she concluded, nurses need staff support in recruiting interested parents and in arranging their workload so they can give sufficient attention to the organization and conduct of their groups.

To consolidate the program described, New York State has a threefold program now in progress, Auerbach reported. This includes supervision of the first group of nurses in the conduct of second parent groups and antepartum groups, a new complete project for public health nurses, and a training program for hospital nurses for work with groups of expectant parents. The research project is being continued, she said, to help evaluate the two new training projects.

Physician Distribution . . .

Low-Income, Rural Areas Report Loss of Physicians

The difficulties faced by rural communities in their attempts to attract and keep physicians will become more serious in the future, stated Milton Terris, M.D., M.P.H., and Mary A. Monk, Ph.D., of the University of Buffalo, Buffalo, N. Y.

Dr. Terris is assistant dean for postgraduate education and associate professor of preventive medicine and public health, School of Medicine. Dr. Monk is research associate in postgraduate education and instructor in medical statistics, School of Medicine, and lecturer in social psychology, College of Arts and Sciences.

The national trend in the distri-

bution of rural physicians is emphasized by the findings of a study in the 32 counties of western New York comprising the Buffalo, Syracuse, and Rochester regions, Terris and Monk said.

Trends in population-physician composition of the population of the United States

Year	Rural population (percent)	Rural physicians (percent)
1906	53	41
1929	48	31
1940	43. 5	20

That rural areas tend to lose physicians in periods of prosperity and to keep them in periods of depression is apparently one of the laws governing the distribution of physicians in the United States, Terris and Monk continued. According to Mountin and Pennell, between 1923 and 1931, a period of prosperity, the rural population of the United States increased 5 percent, whereas the number of physicians in these areas decreased more than 17 percent, they said. The figures for 1931–37, a period of depression, were 6 and 2 percent, respectively.

Age Distribution

In upstate New York in 1950, the age distribution of physicians was essentially the same in all communities, regardless of size; in 1930, physicians in rural areas were considerably older than physicians in urban areas, Terris and Monk stated. This finding is in sharp contrast to the findings of other studies, they pointed out. It may be accounted for by the influx of new graduates into rural areas during the depression years; by the number of young physicians, many of them local residents, graduating each year from the three medical schools in the region studied; and by the fact that the favorable economic position of upstate New York enables rural areas to attract and hold young and middle-aged physicians, they said.

Specialization

Terris and Monk were of the opinion that "despite certain evils of specialization . . . we believe the growth of specialization has been a most important factor in improving the quality of medical care." Some of the differential in the quality of available medical resources between the large cities and the smaller centers is diminishing. In only 10 years, the percentage of full-time specialists in all areas of the three regions as a whole has increased over 50 percent, from 22.3 percent in 1940 to 36.8 percent in 1950. In rural areas, the percentage of specialists rose from 2.5 percent to 6.4 percent, although, in comparison with the urban communities, the percentage of full specialists remained quite low. Sooner or later, the emphasis of postgraduate education will have to take cognizance of these changes.

Income

In the three large cities in the study area, the physician-population ratio increased for the city as a whole and for the middle-income and high-income neighborhoods. For the low-income neighborhoods, however, there was a decrease. From 1930 to 1950, the decrease was 7 percent in Rochester, 14 percent in Syracuse, and 24 percent in Buffalo.

"The widening gap in physician-population ratios between low-income and high-income areas of large cities is apparently a recent phenomenon, at least in the three cities studied," Terris and Monk stated. No ready explanation is available, they said, although the war may have been a factor from 1940 to 1950, when physicians found it easy to change locations.

"It would be of considerable interest to study the situation in other large cities in order to learn whether the decline in the number of physicians in low-income neighborhoods is a general phenomenon and to determine the periods in which such declines occurred," they concluded.

Percentage of physicians in the Buffalo, Rochester, and Syracuse regions in 1930, 1940, and 1950, according to number of years after graduation

Size of community	Years since graduation								
	1930			1940			1950		
	0–10	11–30	31 and over	0–10	11–30	31 and over	0–10	11–30	31 and over
Under 2,000	19. 1	32. 0	48. 8	31. 3	27. 8	40. 9	14. 7	55. 3	29. 9
2,500–9,999	15. 5	37. 3	47. 2	29. 2	33. 7	37. 1	15. 0	52. 9	32. 1
10,000–49,999	23. 1	42. 3	34. 6	24. 6	44. 1	31. 3	14. 2	57. 5	28. 4
50,000–99,999	25. 6	44. 6	29. 7	25. 1	50. 2	24. 7	15. 3	59. 9	24. 7
100,000 and over	27. 0	48. 6	24. 4	24. 8	46. 7	28. 5	21. 2	51. 1	27. 7
Total	23. 9	43. 5	32. 6	26. 2	42. 2	31. 6	18. 2	53. 5	28. 3

Council's Efforts Improve Physician Distribution

The Virginia Council on Health and Medical Care can almost guarantee a physician for a community if the community wants one, needs one, and is willing to work for one, according to Edgar J. Fisher, Jr.

Fisher, director of the council, reported that success of the organization's physician placement service can be attributed largely to its background work with medical students and interns. Since the service began in 1950, 120 physicians have been placed, significantly improving the physician distribution problem in the State as well as providing physicians for smaller communities, Fisher said.

The Virginia council has directed primary attention to the needs of the Medical College of Virginia and the Medical School at the University of Virginia. Support has been given to better salaries for professors, training facilities, and other needs. In addition, 50 medical, 4 dental, and 74 nursing school scholarships are offered annually to students pledging a year of rural practice for each year the scholarship is held.

Rotating Intern Program

Fisher said that the rotating intern program which the council helped promote assists rural hospitals in meeting personnel shortages as well as providing valuable training. The interns are assigned to 6 small hospitals in outlying communities for a 2 to 3 month tour of duty under the supervision of their medical school professors, who make periodic visits to the hospitals.

Junior medical students each fall receive from the council a letter that explains the placement service and offers material descriptive of rural practice. Senior students receive a reminder of the service and, after they become interns, they receive another letter from the council which includes a questionnaire to be returned if the student desires to be placed on the list of available candidates. Out-of-state school students also are assisted to find rural practices. At monthly seminars held at the University of Virginia, rural practice is informally discussed with students.

Services Mutual

"We do all we can to make it easy as possible for a physician to find the type of practice he is looking for," Fisher said. The physicians are sent lists of communities needing physicians and the communities are provided with lists of general practitioners and specialists seeking placement and usually the type of opportunity or skill sought can be provided.

Community requests for help are investigated by the council to establish the need and ability of the area to support a physician. Sometimes requests are turned down but after a request has been cleared, a personal visit is made to the community and it is instructed in the methods of seeking a physician. Experiences of other areas are shared with it, methods of financing clinics are explained, and ways in which to make a community attractive for a physician are detailed.

"The council will help a community to the extent that the community wants to be helped," Fisher stated, pointing out that there were 50 communities then seeking general practitioners and there were 80 available. Specialists were called for in 24 places and 100 were listed as available.

Recently Virginia has set up a dental placement service, as the need for dentists is considered even more acute than the need for physicians. A clearinghouse program for medical technologists is in the planning stage.

Human Relations

Fisher said the program brought out some interesting facts in human relations. Young physicians frequently fail to reply to correspondence, fail to keep specific appointments with communities, and often consider they are doing the community a favor when they locate. Many fail to put roots into the community of choice, and then blame their wives when problems arise. Often they are unappreciative, or unaware, of what the community has done to help them get started.

The attitude of some communities is also disturbing, Fisher reported. Some fail to live up to promises made the new physician; many do not consider his time and his privacy. In many areas, the new physician is called in only for emergencies and night cases. He advised communities to avoid gossip and unjustified criticism of the physician and his family, to respect posted office hours, to avoid raising the price of property a physician seeks to buy.

Trends in Nutrition . . .

Better "Convenience Foods" Predicted for Future

The housewife will have less to do and the food processor more in the preparation of foods for the table.

This was the prediction for the future made by Horace K. Burr, Ph.D., and Everett R. Wolford, of the Western Utilization Research Branch of the Agricultural Research Service, United States Department of Agriculture.

At least some segments of the population will benefit nutritionally, they said, in reviewing the trend toward developing more and improved convenience foods. The wider the variety of foods available in easy-to-prepare form, the more varied will be the diet of the family dependent

on the employed housewife to prepare the meals. Improved color, flavor, and stability, the goals of the processing industry, are usually accompanied by improvements in handling, processing, and storage procedures which largely preserve the nutritive values of the fresh commodity, they stated.

They also felt that the cost of these foods to the groceryman and the consumer would decline as volume expands and competition thrives.

Already observed is the trend to variety in household menus. They pointed out that housewives can now obtain pre-prepared Italian, French, kosher, Chinese, or Mexican dishes although they would have great difficulty in obtaining from grocery shelves the ingredients to prepare these dishes themselves.

Much research in convenience foods is conducted by the Agricultural Research Service, particularly in those foods vital to the armed services.

Burr and Wolford said they expected that in the near future the housewife will be able to buy satisfactory dehydrated foods, like onion flakes, from her grocer. These are now being used successfully by manufacturers of soups, stews, and casserole dishes. Dried eggs and egg fractions and dehydrated diced potatoes satisfactory to the consumer also are to be expected.

New Products

Food processors are beginning to apply vacuum puff-drying techniques to fruit and vegetable juices and may possibly adapt them to milk and other liquid or pureed foods, they stated. Among the most promising today are:

A stable instant orange juice powder with a storage life in excess of 6 months at 100° F. with very little change in flavor or vitamin C content and only minor losses of carotene. Other citrus fruits will be processed similarly.

A tomato juice powder which can be reconstituted into an excellent juice or can be used as a substitute for tomato paste for use in the preparation of dry mixes for tomato aspic, spaghetti sauce, or tomato soup. Losses of ascorbic acid during storage of the tomato powder are negligible when packaged in vacuum or under nitrogen with an inpackage desiccant, not more than a few percent loss in 6 months at 100° F. In contrast, under the same conditions canned tomato juice may lose 40 percent of its ascorbic acid, and a high solids canned tomato juice concentrate may lose 80 to 90 percent.

Dried and Concentrated Foods

Mashed potato powder appeared on the retail market in 1947. At that time it met with limited consumer acceptance, they reported, as it developed a brownish offcolor and a slightly scorched flavor during storage. The product has been improved until it is virtually free of this defect. A second defect, a pasty or rubbery texture in the reconstituted potatoes, they stated, will not appear if directions are followed carefully.

Dehydrated milk products have been improved and are finding consumer acceptance, they reported.

A new technique using the enzyme glucose oxidase which converts the glucose in whole egg and yolk into gluconic acid has eliminated the objectionable browning of dried egg products and greatly increased their storage stability from a flavor standpoint, they disclosed. They said that the dried whole egg solids produced by the new process are about 50 times as stable as the World War II product, and if properly packaged the new product should make highly acceptable scrambled eggs even after a year in storage at 100° F. At the same time, extensive research in pasteurization has resulted in general acceptance of methods to reduce active microbial contamination of egg solids.

Nutrition Education Alters Students' Menu Patterns

In Kansas City, a natural locale for steaks and beef roasts, nutrition experts suspect that green leafy vegetables are seldom part of the family meal.

At least, the food habits of young teenagers indicate that the family pattern of eating may emphasize meat to the neglect of green vegetables. Some food habits, however, have been favorably influenced by the emphasis given to nutrition education in the public schools. Other values of the program may not be evident until these children have grown up and have homes of their own.

Pattric Ruth O'Keefe, Ph.D., director of health and physical education for Kansas City schools, told about a recently completed study undertaken to measure what boys and girls know, as well as what they do, about nutrition. She said that the statistical data will be found in a subsequent report.

Patterned on the nutrition studies made in Ascension Parish, La., by Dr. Eugenia Whitehead, University of Iowa, the study centered around the individual teacher's creative ability to relate nutrition education in her classwork to other subjects and to community activities. The experiences planned for the children were as limitless as the initiative and interest of the teacher. Materials and help were given, and parents, principals, and educators were consulted for exchange of ideas and information. Dr. Whitehead was co-director of the study.

Creative Education

Sixth and seventh grade children in 2 schools were tested along with the same grades in 3 other schools, but the children in the first 2 schools were not aware they were functioning as a control group. Both control and research groups were followed for 3 years and tested at intervals. When they reached the eighth grade, research groups showed evidence of holding their own and making better nutritional progress than the control groups.

All six participating teachers developed their own programs after the first food appraisal revealed the areas needing improvement.

The first test showed that both research and control groups fell below the standard recommended for daily intake of milk, eggs, citrus fruits, other fruits, butter and fortified margarine, Irish and sweet potatoes, green leafy vegetables, nonleafy vegetables, whole grain and enriched products, and lean meats. The highest intake was in meat—one class consumed 46 percent more than the recommended daily dietary allowance. The lowest intake was not only in green vegetables but in butter and fortified margarine, milk, and potatoes as well.

Some of the teachers planned study trips to city markets, followed by vegetable-tasting parties to get at the problem of changing the diet pattern. The next year the problem was approached through an animal-feeding demonstration with guinea pigs. Another way of meeting it was to plan meals from menus of different places.

When one teacher learned that few of her students had ever been to a restaurant, she decided that actual experience with money and transportation, good manners and good grooming, and knowing why certain foods were chosen were essential to help boys and girls hurdle the transition from 25-cent plate lunches to the selection of meals in high school cafeterias and public eating places.

From this and similar experiences, two filmstrips were later prepared. One is entitled "Eating Out."

Measured Gains

At the beginning of the study only 53 percent of the research group and 35 percent of the control group met the recommended dietary allowance in green leafy vegetables. At the end of the second year there was only a 19-percent gain for the research group and a 13-percent gain for the control group.

At the close of the second year the children who participated had met or surpassed the recommended daily allowance in 6 food groups. The control group met or surpassed the standard in 2 food classes only.

At the end of the study the research groups had met or surpassed the food standards in 3 food groups and had made gains in 7. The greatest gain, 21 percent, was in butter and margarine intake. The control groups met or surpassed the recommended allowances in 1 food group and made gains in 3 food groups, including the fats.

Over the 3 years, the sixth graders showed an improvement in food intake in every group except noncitrus fruits and nonleafy vegetables. The sixth grade controls improved their food intake only in meat, fats, and potatoes.

Results of the Ohio education and hygiene test showed the groups in the research schools to have a broader and more scientific knowledge of food than those in the control schools.

The nutrition information test showed an equality in medians between the research and control groups at the start, 43 for both, but 3 years later the medians were higher—61 for the research group and 53 for the control group.

The above average scores on reading, language, and social studies for the research group allayed all fears teachers had expressed about the amount of time they spent on nutrition education.

Chronic Malnutrition Pictured in Mexico

Evidence gathered from malnourished patients at the Hospital de Enfermedades de la Nutrición, Mexico City, Mexico, D. F., suggests that inadequate nutrition leads to lowered cellular activity: Cells are unable to use the indispensable vitamins and hormones which promote cellular metabolic activity with the result that glands, lacking normal stimuli, atrophy.

The director of the hospital, Salvador Zubirán, M. D., said that the hypothesis of decreased activity in the entire endocrine systems is supported by clinical, histological, endocrine, and dietetic studies on 543 patients between ages 20 and 60. Recovery of patients placed on an adequate dietary regimen and concurrent work with children at the Hospital Infantil of Mexico also support the theory, even though experimental evidence is still needed, he added.

The nutrition studies have led to the concept of a chronic deficit in every component in the diet. The Mexican investigators have termed the multiple deficiency "chronic malnutrition" to denominate the complex clinical manifestations found in the malnourished patient suffering from a combination of pellagra, pellagra sine pellagra (when there are no dermatological manifestations), beriberi, hypoproteinemia, nutritional anemia, and ariboflavinosis.

"We know now that the endocrine disturbances have great significance and should always be investigated in malnutrition because they have at least the same importance as the alterations in other organic functions and are more important and more significant for the life and well-being of . . . patients than the dermatological alterations so fully described by others," he stated.

He explained that although nutritional deficiency is common to Mexico and the rest of the Latin American countries, the people show no signs of deficiency in clinical examinations or in laboratory tests. They are apparently healthy and capable of much physical exertion. Insufficient intake is manifest only in a decrease in mental capacity, lack of ambition, short stature, and in low resistance to infection. Otherwise, their bodies are adapted to a diet inadequate in calories, vitamins, and proteins especially. Any slight reduction in the usual intake or any increase in metabolic requirements, however, easily upsets their equilibrium.

Chain Reaction

A diet deficient in every respect affects each cell in the organism and the organic functions, leading to

clinical syndromes in one or another system of the body, Zubirán continued. Lesions of the skin and mucous membranes are present and so are neurological, hematological, digestive, and endocrine disturbances.

When the nutritive elements are not present in amounts adequate for normal cellular life, organic combustion decreases within the cell. All of the cellular metabolic processes decrease progressively until only those absolutely necessary for life remain.

The metabolic processes are slowed, and the rate of utilization and inactivation of hormones deriving from the target glands is proportionately diminished. This decreased utilization results in a relatively high blood concentration of the hormones, leading to inhibition of the pituitary gland. Thus, the production of trophic hormones is reduced, and the target glands do not receive their customary stimuli.

The final result is a picture of panhypopituitarism resulting from the reduced amount of hormones secreted by the target glands and from the incapacity of the tissues to respond to the hormones.

Panhypopituitarism in turn leads to a dysfunction of the entire endocrine system. The gonadal functions are the first to be lost. Next, in a minor degree the functions of the adrenals and thyroid are altered. Toward the end, the endocrine functions that intervene in vital oxidation and production of energy are lost.

Histological studies of postmortem and biopsy material obtained in 195 cases of malnutrition constantly showed atrophy and involuntary changes in the anterior pituitary, adrenal, and thyroid glands, and in testes or ovaries. Hormone determinations and endocrine function tests as well as the clinical studies showed the existence of marked hypogonadism, amenorrhea, and low estrogen activity in women, and, in men, impotency, decreased libido, and marked testicular atrophy.

Dietary Study on the Aged Shows Need for Research

A controlled, detailed, longitudinal study between 1948 and 1954 on the nutritional status of 577 aging persons in San Mateo County, Calif., revealed that dietary factors show a high correlation with some diseases.

The study, based on analysis of food intake and blood chemistry, was reported by Harold Chope, M.D., Dr.P.H., director, San Mateo County Department of Public Health and Welfare, and Lester Breslow, M.D., M.P.H., chief, bureau of chronic diseases, California State Department of Public Health, San Francisco.

Of 88 deaths—63 male and 25 female—occurring among the 577 subjects, 85 percent resulted from 3 causes: heart and circulatory diseases, nervous system diseases, and malignant neoplasms, they reported.

Although this series is small, it confirms other previous study findings. These are:

Heart and circulatory disease is the greatest killer of all the diseases.

The death rate from heart and circulatory diseases is 5 times greater in those over 70 than in those 50 to 69 years of age.

The death rate from nervous system diseases is about equal in men and women, but 2½ times greater in those over 70 than in those 50 to 69.

To date the death rate from malignant neoplasms among the subjects studied is 3 times higher in males than in females, but about equal for the two age groups.

The death rate from disease of the respiratory system is 3 times higher in males than in females and 7 times higher in those over 70 than in those 50 to 69 years of age.

Dietary Relationships to Deaths

The percentage of deaths in patients with recorded systolic pressures of 180 mm. of mercury and more was 4 times higher than for those whose systolic pressure was under 140, they said. In males the percentage of deaths was 4½ times greater and in women only 1½ times greater than in those with systolic pressures under 140. Diastolic pressures did not correlate to the same degree, although the death rates were slightly higher when pressure was 100 than it was when under 90.

Overweight persons were shown to have a death rate from cardiovascular-renal disease nearly double that of normal weight individuals, they said. A relationship between high cholesterol and hypertension or cardiovascular-renal deaths could not be supported by the data. Subjects with lower blood cholesterol suffered the highest death rates from these diseases, they reported.

The death rates in persons with low blood concentrations of vitamin A, niacin, and ascorbic acid was higher than in those with normal or high concentration, they said.

No significant relationship could be found between death and hemoglobin, blood glucose, blood creatinine, caloric intake, protein intake, fat intake, carbohydrate intake, calcium or iron intake, they declared.

The maintenance of a sufficient ascorbic acid intake is apparently essential for good oral hygiene to preserve teeth and prevent gingivitis, they asserted. Study subjects with ascorbi serum less than 50 mg. were 50 percent endentulous; those with 50–109 mg. were 40 percent endentulous, and those with 110 mg. were only 32.3 percent endentulous.

The Bureau of Human Nutrition and Home Economics, United States Department of Agriculture, the Public Health Service, the University of California department of home economics, the California State Department of Health, the San Mateo County Department of Public Health and Welfare, and the San Mateo County Medical Society participated in the study.

Criteria for selection of the subjects were: not on a special diet; not under the care of a physician within the past 3 months; physically and mentally capable of participating, and subjectively in good health; an equal sample of males and fe-

males (the final count was 280 males and 297 females); age distribution as comparable as possible to the general community.

The investigation included a 7-day recorded food intake and general food history taken by a nutritionist; clinical history including general medical and detailed systems history; a physical examination; and laboratory procedures including: blood hemoglobin, serum protein, sedimentation rate, packed red cell volume, blood glucose, ascorbic acid, vitamin A, carotene, nonprotein nitrogen, free cholesterol, and cholesterol total, leukocyte count with cell differential, erythrocyte count, and serologic test for syphilis.

Also included, they added, were urine glucose and albumin tests, chest X-ray, bone density determination, and vaginal Papanicolaou smears for all female patients.

This report, Chope and Breslow said, is only one phase of this broad study. It provides an approach to the part which preventive medicine may play not only in the prevention of deaths from heart disease, neoplasms, and central nervous system disease, but also in promoting a fuller life for the aging.

Claims Food Advertising Has Adequate Policing

Refutation of the contention that food and nutrition advertising is inadequately controlled was offered by Paul J. Cardinal, B.S., vice president in charge of the vitamin division, Hoffmann-La Roche, Nutley, N. J.

The Federal Trade Commission and the Food and Drug Administration, he believes, are effective deterrents to serious abuses of public credulity. The advertiser, he added, may also have to remember other Federal agencies, such as the Treasury Department if he is selling an alcoholic beverage. He is mindful also of State laws and of organizations such as the better business bureaus.

These, along with an increasingly well-educated public, remove the need for additional voluntary tribunals, he stated.

Cardinal pointed out that in the $8 billion advertising business, most advertisements are developed by experts who, through survey and test campaigns, keep alert to the public attitude. Nutrition workers will get results from justifiable criticism by writing direct to advertisers, he maintained.

Life is far from light for the person who has final responsibility for the claims to be made in his company's advertising, he said, and declared that the desire to be correct, accurate in scientific data, and fair is predominant. A cease and desist order, he explained, is a blight upon the company's record and as worrisome as the arrest of one's child.

The American public likes advertising, he claimed, recognizes it has contributed to high standards of living and comfort, and knows that high-pressure selling may produce some overemphasis. The public, he said, feels itself qualified to judge good from bad claims and insists it be left free to do so.

Health Services for Migrants . . .

Migrants in Colorado Get Health Services

Planning for health services for migrant agricultural workers means planning for adequate services for all residents of a community and making these services available to migrants, stated Ruth B. Howard, M.D., M.P.H., and Georgia B. Perkins, M.D., of Denver, Colo.

Dr. Howard is chief of the maternal and child health and crippled children section, Colorado State Department of Public Health, and Dr. Perkins is regional medical director, Children's Bureau, Region VIII, Department of Health, Education, and Welfare.

Health services are "available" only if they are acceptable to and meet the needs of a group, they continued. In many areas, coordination of existing services is all that is necessary to accomplish this; in other communities, new public or private services may need to be added or other services expanded during peak seasons.

Health and welfare services, they stated, must be adapted to the cultural characteristics of the migrating group and of the local community. The medical problems of migrants, although aggravated by the circumstances of their lives, are similar to the medical problems of permanent residents of a community. Migrant workers will accept health services when these services are offered in terms which they can understand, they asserted.

Also, in all places where the migrant travels or lives, health and welfare services must be coordinated. Even in local areas, groups such as the county welfare department, employers' groups, voluntary agencies, the health department, and the medical society frequently are not familiar with the resources and programs of the others. However, progress is being made toward better understanding between these groups.

Colorado Project

Howard and Perkins described a project in two large labor camps—Fort Lupton and Palisade—in Colorado for improving the quality and availability of maternal and child health and other medical services for agricultural migrants. In this project, particular consideration was given to improving communication between the migrants and local resi-

dents, the agencies and individuals, the local communities within the State, and the States where the migrants traveled.

In each community, it was emphasized that each part of any program would be undertaken only if it was mutually agreeable to the community and the project administration.

The programs in the two camps were similar, although some policies differed. For example, in Fort Lupton, home visiting by nurses was not emphasized; in Palisade, nurses routinely called on all new families.

A medical social worker assisted in community organization and project planning and promoted interagency cooperation by keeping local, State, and Federal agencies informed about the project. She also gave technical consultation to the staff of both camps and direct advice to some patients, and she participated in the home followup of some of the 28 pupils in a 6-week school for children of migrants.

Problems of chronic disease and disability, among them cases of tuberculosis, were found in both camps. Although the tuberculosis patients could not meet the residence requirements for hospitalization at State expense, a voluntary institution accepted them without charge. Hospitalization of the patient often depended upon making satisfactory provision for the other members of the family, particularly the children, Howard and Perkins said.

They reported that, in both camps, the clinical conditions most frequently seen were diarrhea and upper respiratory infections. There were 35 known pregnancies in Fort Lupton, 23 in Palisade; 1 infant death and 1 delivery in Fort Lupton, none in Palisade. A puzzling finding was the incidence of burns, high in Palisade and low in Fort Lupton. Clinic services were used at some time by 22 percent of the individuals at Fort Lupton and by 17 percent of those at Palisade, they said. A summary of the use of health services in the two camps is shown in the tabulation.

	Fort Lupton	*Palisade*
In camp:		
Families	425	328
Individuals	2,213	1,316
Adults	1,190	832
Children	1,023	484
Seen in clinic:		
Families	198	135
Individuals	496	224
Adults	226	88
Children	270	136
Individuals seen by:		
Physician	319	72
Nurse alone	181	224
Total visits:		
Clinic	1,056	385
Home (public health nurse)	73	633

Although the experience in these two camps does not furnish an accurate picture of the medical needs of migrant agricultural workers, it can serve as a basis of comparison with future results and with the experience of other medical care projects.

Project to Continue

At the end of the season, Howard and Perkins reported, the consensus was that the project had been definitely successful and that health needs had been taken care of earlier and more smoothly than in past years. Improvement in relationships and communications between agencies was noted as each agency learned about the other's functions and resources. The work of the nursing staff with representatives of the peach growers and in the community had resulted in better understanding of the local health department.

The program is to be repeated next year, they said. In the meantime, efforts are being made to improve communications within the communities and to overhaul and improve record forms, in consultation with interested groups, with particular emphasis on means of referral between health services. "We . . . will continue to advocate the formation of a State committee for Colorado," they concluded. "With such a committee and with the State structure properly integrated with that of the region, we believe that health services in local areas can be so developed and fitted together that migrants like other citizens can receive the care they need."

Health Education Workshop . . .

Health Training Standards Set by Oregon Workshop

Standards for teacher preparation in school health work have been established in Oregon following extensive study by professional groups.

C. L. Anderson, Dr.P.H., professor of hygiene and health education, Oregon State College, Corvallis, reported that a professional policy committee of 17 members was formed to suggest and establish standards after the Oregon State Department of Education reported 3 years ago that the State's school health program was handicapped by teachers inadequately prepared in health.

On the committee were representatives from the Oregon State Medical Society, State Department of Education, State Board of Health, Tuberculosis and Health Association, Cancer Society, Mental Health Association. Medical schools, the State university and college, teacher and private colleges and universities also were represented.

The policy committee developed a report on functions and competencies to serve as the basis for curriculum construction, Anderson reported. A central committee of 17, representing school administrators and teachers, developed the curriculums, as amended later by the policy committee. These were designed for preparing secondary and elementary school teachers in health.

The contents for the curriculums of colleges, secondary and primary schools were developed by 56 educators. In a 2-week workshop held at Oregon State College, the educators were assigned to subject matter committees of their own choosing. Their recommendations, edited by a subcommittee, were placed into a composite report and approved with modifications by the central and policy committees.

The final product, Anderson stated, provides the basis for certification for health teaching and also serves as guide to the schools in States preparing teachers for health instruction.

Anderson felt that the development of the standards was made possible through use of "a thoroughly democratic process" in which the persons interested in school health united their efforts.

During the general sessions of the workshop, Anderson said, the participants became acutely impressed with the need for a further understanding of school health on the part of school administrators if school health programs were to be effective. The workshop participants passed a resolution urging the State department of education to incorporate school health in the professional preparation of administrators. The proposal was accepted and a unit was incorporated into an existing course in school administration.

Preplanning Techniques Key to Success

"More than any other educational procedure, the health education workshop provides the opportunity for the participant to assume responsibility for his own learning in an environment in which tensions are reduced, where there is emphasis on individual growth, where there is time for planning, study, observation, and recreation, and where each individual's ideas and contributions are valued."

This statement by Edward B. Johns, Ed.D., professor, school health education, University of California at Los Angeles, summed up his review of the techniques in health education workshops.

Preplanning is a prerequisite technique for producing an effective workshop, he indicated. Preplanning sessions achieve team cohesiveness, determine the need for a workshop, identify the current problems of the group, decide the central theme, he said.

Johns favored the type of preplanning in which the group develops the framework for the program, including the general sessions, with a time schedule for individual conferences and group meetings. This includes handing out such information in booklet form for distribution to the participants. It also provides for the election by participants of a program-of-work committee, giving members the opportunity to share in planning their own program.

Factors to be worked out in this stage, he said, include the following: the amount of financial support; the selection of an outstanding staff, consultants, and resource persons; the production of a brochure and agreement on the amount and type of publicity; and the size of the workshop group.

The mark of real achievement by the preplanning group is the ability to mix the proper ingredients of program structure to give the workshop form and substance and at the same time allow for flexibility with opportunities for program planning on the part of the participants, he continued.

Mindful that some workshops have been unsuccessful because of the failure of those concerned to determine the demands of prospective members in the field, he remarked, "A workshop is not a workshop if it is a series of sessions forced upon a professional group."

One of the best means of assuring financial support is to encourage participation of the influential representatives of organizations and agencies in the preplanning sessions, he said. Other effective techniques he recommended are the following:

For the proper orientation of leaders, distribute mimeographed materials on the role of the consultant, the resource person, the chairman, and the records, plus a thumbnail sketch of each leader's function.

For evaluation of workshop results, have staff members discuss each participant's accomplishments in a staff and consultants' meeting to make sure that the progress achieved was accurately and fairly appraised.

For securing as many administrator-participants as desired, capitalize on the general interest of the administrator in healthier, happier children, youth and adults, or pay his expenses, or lure him to an outdoor workshop held in an exceptionally fine recreation area.

Pennsylvania's Workshops Show Positive Results

The workshop, a comparatively recent venture in the field of health education, among other results is proving an effective means of community-school cooperation, concluded Arthur L. Harnett, Jr., Ed.D., in charge of health education, Pennsylvania State University, in

his discussion of the 10 years of experience with workshops in Pennsylvania.

He cited the following as other results of workshop projects: They provide a method of unifying and strengthening the efforts of individuals, which otherwise might be ineffective; they give many specialists—in medicine, dentistry, nutrition, psychology, public health, and education—a chance to share in planning programs in health education; and they are a means of discovering current trends and problems in health education.

Harnett said the workshop is characterized by a program based on interests, problems, and needs of experienced health teachers or leaders; democratic procedures; ease of communication; and a variety of methods for individual and small group participation. Its social climate sheds a "halo effect" upon all the work undertaken.

Harnett reported that in Pennsylvania each of the 6 annual workshops is planned by each workshop director with the help of a central statewide committee—the Inter-Agency Planning Committee. The latter group is comprised of representatives from State departments of health, welfare, and public instructions, the State medical society, and the Pennsylvania Tuberculosis and Health Society.

Participants are selected locally, Harnett said, with guidance from the county superintendent of schools. Scholarships from local voluntary health agencies—cancer societies, heart associations, tuberculosis societies, and chapters of the National Foundation for Infantile Paralysis—are awarded to participants.

The participants later have a chance to evaluate the workshop through their own efforts. Harnett listed six evaluation procedures by which the effectiveness of the program can be judged.

1. A comparison of preworkshop questions and problems with end-of-workshop findings as to how these same questions and problems were answered.

2. A measure of health information, both factual and applied, gained by each participant during the 3-week workshop, as shown by standardized tests.

3. Evaluative statements, checks, and opinions of participants on the conduct and outcome of the workshop, particularly in relation to the effectiveness of group interaction.

4. The judgment of a representative steering committee, which meets regularly and interprets the opinions of the workshop members, conditioned by an evaluation of present program and immediate needs.

5. Periodic summaries during the workshop, such as end-of-the-week reviews, to determine changes, emphasis, and direction of the workshop program.

6. A followup questionnaire, some 8 months to a year after the workshop, to discover progress in attaining more remote or long-term objectives. Some workshops have had reunions or evaluation meetings to discuss strengths, weaknesses, and values in the workshop program.

Cooperation Features Arkansas Planning

The health of the child is of first importance in Arkansas schools, asserted Jeff Farris, M.S., director of health and physical education, Arkansas State Teachers College, Conway, and consultant in school health, Arkansas State Board of Health, Little Rock.

Farris reported that progress during recent years in developing and improving Arkansas school health programs was due to cooperative planning among State agencies.

The guiding principle of cooperative planning was to include almost every State group which had a contribution to make in planning the school health program, Farris stated. The State department of education and the State board of health have been the leaders, but the Parent-Teacher Association, the Arkansas Education Association, the University of Arkansas Medical Center, the crippled children's division of the State department of public welfare, the Lions Club and other civic groups, the county health departments, and most State and voluntary agencies have participated in planning and operating school health activities, he said.

Cooperative planning in Arkansas had its beginning in 1947 at the Southern States Work Conference in Daytona Beach, Fla., Farris said. While attending the conference, representatives from Arkansas decided to establish pilot programs of school health in three of the school health systems. In the summer of 1948, a workshop included a group of school superintendents who wanted their schools to be part of the pilot group. A 2-week workshop has been held every summer since then for representatives of all agencies taking part in the program. About 1,000 persons have attended these workshops, he reported.

Coordinating Activities

Perhaps the most important single administrative result of the workshops has been the Joint Coordinating Committee for Promoting Health Education in Schools, Farris said. This is a permanent group made up of an equal number of members from the State departments of health and education and is the coordinating and activating agency for all groups participating in the school health program. The chairman and the secretary are chosen from one department one year and from the other department the next. Subcommittees are responsible for the various areas of school health.

Arkansas has no special school health agencies, Farris stated, and financial, educational, protessional, and civic agencies work together. One agency supplies money and others supply personnel, transportation, or materials.

The State board of education has adopted standards for school health produced at the 1951 summer workshop, Farris said. Schools are now

rated on school health by the State department of education.

Accomplishments of the Program

Reviewing the accomplishments of the school health program since 1947, Farris stated that Arkansas now has part-time health coordinators in most public schools; five publications dealing with school health have been supplied to schools without charge; a section for school health coordination has been established in the program of the Arkansas Education Association; and additional personnel have been employed or personnel have been reassigned in the State department of health and education.

The program has pointed the way for other interested groups to improve their areas of education, Farris said in conclusion, and "we are seeing a new awakening on the part of the local school administrators." The State school superintendents and the county school administrators have formally endorsed the efforts which have been made to improve the health of school children, and both State and county schools now have an advisory committee which quite actively assists the joint coordinating committee in many facets of its program.

Military Public Health . . .

Overseas Tasks Challenge To Military Veterinarian

Reviewing veterinary public health problems encountered at overseas military bases, Maj. Robert P. Juni, V.M.D., M.P.H., said that the military veterinarian's responsibilities range beyond food inspection activities into preventive medicine.

Formerly veterinarian with the 4th Epidemiological Flight attached to Surgeon, USAF in Europe, Major Juni is now command veterinarian, Air Proving Ground, the Eglin Air Force Base, Fla. He said that military public health in Europe embraces military families in a dozen different countries.

He ascribed the expansion of veterinary medicine overseas partly to the shortage of base-assigned physicians and sanitary engineers, and partly to the increased emphasis on the study of how diseases were actually being spread. Much of the expansion he attributed to the practical necessity for organizing workable systems.

Local foodstuffs supplied to overseas bases are entirely under the military veterinary inspection system. Procurement is complicated by local production methods, processing machinery, difficulties with languages, customs, and laws.

Military Public Health

The staff veterinarian, in peacetime Europe, improvises practical measures and initiates his public health reforms with limited personnel and limited facilities. In these circumstances, Juni said, he quickly becomes a student of the natural history of the local infective agents as well as an amateur anthropologist. Even some of the infections prevalent in the United States may have a different clinical course locally. The veterinarian steps into the role of liaison officer in his efforts to cooperate with the agricultural animal disease programs in each country.

To prevent transmission of exotic animal diseases across the Atlantic, he may find himself following the host country's epidemiological reports on myxomatosis, the well-publicized rabbit plague which spread from France into Germany, the Benelux countries, and over the channel into England. He has to weigh the necessity for strict quarantine of hunting dogs which, if they are shipped to the United States, could carry infected fleas from the European rabbit to the American rabbit.

The military veterinarian indirectly bolsters the economy of the host nation as he tries to solve the problem of supplying meat and milk, Juni said. He has a record of establishing new food processing industries, improving existing distribution channels, and modifying inspection methods to meet the strange new threats to health. His military food sources are cited as models by related industries in the country.

Difficulties encountered in establishing a new source of milk supply in France, for example, illustrate the necessity for compromise with the local scheme of living. A vast amount of farm sanitation had to be done at the start, making it necessary to use a separate processing operation for milk from farms meeting minimum standards. Tuberculin testing and quality control of raw milk were instituted to enable other farms to qualify for the segregated farm supply.

These obstacles were superseded by the problems of locating a water supply uncontaminated by sewage, adapting local methods of counting bacteria to American specifications, and getting the release of health certificates on dairy workers when local custom decreed that they be seen only by a licensed physician.

Tuberculosis

Potential hospitalization of infected personnel with a long-term disease such as tuberculosis means a loss to the command, Juni continued.

Tuberculosis is common in dairy cattle in Europe. Generalized infections are routinely found in local abattoirs. In some areas cattle herds are 90 percent infected, raising the question of bovine sources for extrapulmonary cases in humans. Pulmonary infections of bovine origin have been reported also in areas

of high incidence in cattle. Germany reports the incidence of tuberculosis as being 21.95 per 10,000 persons in 1953, with surveys indicating that 10 percent of these cases are of bovine origin.

Denmark and the Netherlands already have area eradication plans in effect. England is in the process of establishing additional accredited areas. Germany and France have the nucleus of area plans in regions in which the quartermaster corps has sponsored a milkshed.

However, tuberculosis control has been hampered by incomplete epidemiology of the disease among military personnel. Fortunately, the natural fastidiousness of the typical American plus local controls over large off-base restaurants and military inspection of local food supplies decreased the risk of infection for troops.

Other Diseases

Pets owned by military personnel have, at times, been responsible for many veterinary control problems, Juni indicated.

To control outbreaks of psittacosis, registration of parakeets and other psittacine birds is required.

Routine immunizations of household pets quickly eliminated the threat of rabies when it became known that wildlife rabies was prevalent in West Germany for the first time since the Napoleonic wars.

In Rheinland-Pfalz, when 50 percent of 179 herds of sheep tested positive for brucellosis (Malta fever), possible spread to the families of military personnel was avoided by arranging to have local veterinary police ordinances rigidly enforced before sheep were allowed to graze on military bases.

Immediate control measures were initiated when it was found that 40 percent of Air Force guard dogs in Europe and North Africa had a significant titer for leptospirosis.

The bases in the areas where leptospirosis of any type was endemic were advised of the hazard of epidemics. The protean nature of the clinical symptoms was stressed, and arrangements were made for the submission of serum samples for definitive diagnosis. The factors affecting the size of the wildlife reservoir were watched so that epizootics and consequent epidemics could be anticipated.

The ecology of other zoonoses was studied in an attempt to evaluate other potential health hazards. One objective was the avoidance of possible breakthrough of any animal diseases. A second objective in such studies was the provision of readily accessible information upon which to base control measures in the event of outbreak, Juni concluded.

Describes Public Health In Military Government

American military experience with Civil Affairs and Military Government (CAMG) since 1940, with an outline of problems and policies, was described by Colonel James P. Pappas of the Preventive Medicine Division, Office of the Surgeon General, Department of the Army.

CAMG activities relate to the commander's responsibilities in civil-military relationships. These range across a broad spectrum with civil affairs at one end involving relationships and agreements in friendly or allied territory to "full-blown" military government of enemy occupied territory at the other end with full executive, legislative, and judicial authority, within principles of international law. CAMG was identified as an "instrument of national policy," he said.

During the combat phase, military necessity (factors relating to winning the war) and compliance with the principles of international law (Geneva Convention) require the fullest possible support by CAMG and its public health staff. Of necessity during this phase, the operational responsibility for CAMG public health falls upon the surgeon who controls medical personnel, supplies, and transportation, he explained. Further, during this phase, military operations control is along tactical lines unrelated to political and governmental territorial organization and channels.

In the postcombat, or static, phase, the role of CAMG and tactical forces are reversed. CAMG becomes the main force to win the peace, with the occupational forces acting for security and in support, he said.

Pappas favors the early civilianization of the CAMG organization, and, indeed, the policy of the Army is to have a civilian agency of the Government assume this function as soon as possible after cessation of hostilities. The military government responsibility was not completely transferred to a civilian agency of the Government until almost 5 years after cessation of hostilities.

In a summation of the management of public health by military authorities occupying Germany, he commented that the public health services had been more or less improvised in Sicily and Italy but had benefited from considerable planning in northwest Europe. Even so, there were but a dozen physicians with about the same number of paramedical personnel available for combat-support field public health work.

Following a review of the problems and principles of CAMG public health operations in Japan and Korea, Pappas pointed out that the Korean conflict stimulated organization and coordination among all Government agencies and the Joint Chiefs of Staff designated the Chief of Staff, United States Army, as executive agent for CAMG for advice, planning, and coordination.

CAMG public health involves all the skills and techniques and problems of a national ministry of health and provincial and city health departments—only it is much more complicated and frustrating. It is surprising to some, though truistic enough in itself, that military government is government nevertheless with the ordinary problems and perplexities increased enormously.

Milk Sanitation Honor Roll for 1954–55

Fifty-six communities have been added to the Public Health Service milk sanitation "honor roll" and 52 communities on the previous list have been dropped. This revision covers the period from January 1, 1954, to December 31, 1955, and includes a total of 270 cities and 55 counties.

Communities on the honor roll have complied substantially with the various items of sanitation contained in the Milk Ordinance and Code Recommended by the United States Public Health Service. The State milk sanitation authorities concerned report this compliance to the Public Health Service. The rating of 90 percent or more, which is necessary for inclusion on the list, is computed from the weighted average of the percentages of compliance. Separate lists are compiled for communities in which all market milk sold is pasteurized, and for those in which both raw milk and pasteurized milk is sold.

The recommended milk ordinance, on which the milk sanitation ratings are based, is now in effect through voluntary adoption in 422 counties and 1,600 municipalities. The ordinance also serves as the basis for the regulations of 34 States and 2 Territories. In 11 States and the 2 Territories it is in effect statewide.

The ratings do not represent a complete measure of safety, but they do indicate how closely a community's milk supply conforms with the standards for grade A milk as stated in the recommended ordinance. High-grade pasteurized milk is safer than high-grade raw milk because of the added protection of pasteurization. The second list, therefore, shows the percentage of pasteurized milk sold in a community which also permits the sale of raw milk.

Although semiannual publication of the list is intended to encourage communities operating under the recommended ordinance to attain and maintain a high level of enforcement of its provisions, no comparison is intended with communities operating under other milk ordinances. Some communities might be deserving of inclusion, but they cannot be listed because no arrangements have been made for determination of their ratings by the State milk sanitation authority concerned. In other cases, the ratings which were submitted have lapsed because they were more than 2 years old. Still other communities, some of which may have high-grade milk supplies, have indicated no desire for rating or inclusion on this list.

This compilation is from the Division of Sanitary Engineering Services of the Bureau of State Services, Public Health Service. The previous listing, with a summary of rules under which a community is included, was published in Public Health Reports, September 1955, pp. 910–913. The rating method was described in Public Health Reports 53: 1386 (1938). Reprint No. 1970.

Communities awarded milk sanitation ratings of 90 percent or more, 1954–55

100 PERCENT OF MARKET MILK PASTEURIZED

Community	*Date of rating*
Arizona	
Phoenix	11–21–1955
Arkansas	
Fort Smith	8–26–1954
Colorado	
Boulder County	2–25–1955
Colorado Springs	1–20–1954
Denver	10–28–1955
Grand Junction and Mesa County	4–15–1954
Las Animas-Huerfano Counties	3– 9–1954
District of Columbia	
Washington	3–15–1954
Florida	
Jacksonville	8–27–1954
Georgia	
Albany	12–16–1954
Athens-Clarke County	4– 8–1955
Atlanta	10–28–1955
Augusta-Richmond County	7– 2–1955
Cairo	2–25–1955
Calhoun	7–28–1955
Georgia—Continued	
Camilla	9– 9–1955
Columbus	2–17–1955
Dalton, Whitfield County	9– 9–1955
Dublin	3–18–1955
Elberton	2– 9–1954
La Grange	7–15–1954
Moultrie	11– 4–1955
Quitman	8–25–1955
Savannah, Chatham County	8–12–1954

Communities awarded milk sanitation ratings of 90 percent or more 1954–55—Continued

100 PERCENT OF MARKET MILK PASTEURIZED—*Continued*

Community	*Date of rating*
Georgia—Continued	
Statesboro	12– 3–1954
Swainsboro, Emanuel County	5– 5–1954
Valdosta	4–29–1954
Waycross	2– 4–1954
Idaho	
Jerome	11–24–1954
Illinois	
Chicago	6–28–1955
Indiana	
Anderson	6– 9–1955
Bedford	8–30–1954
Bloomington	6–––1954
Calumet region	5–26–1955
East Chicago	
Gary	
Hammond	
Cooperative grade A milk program	6–28–1954
Holland	
Huntingburg	
Jasper	
Tell City	
Crawfordsville	4–20–1955
Elkhart	9–––1954
Evansville	12– 3–1954
Greencastle	5–19–1954
Indianapolis	9–15–1954
La Fayette and West Lafayette	10–14–1954
Lake County	5–––1955
Crown Point	
Highland	
Hobart	
Logansport	4– 9–1954
Madison	8–––1955
Mount Vernon	10–18–1954
Muncie	11–23–1954
New Castle	11–––1954
Peru	2–––1955
Shelbyville	9–––1954
Terre Haute	2– 3–1955
Valparaiso	5–13–1954
Vincennes	3– 7–1955
Iowa	
Dubuque	12– 2–1954
Kentucky	
Bardstown	3–––1955
Bowling Green	1– 7–1954
Brandenburg	8–12–1954
Campbellsville	4– 8–1955
Kentucky—Continued	
Frankfort	7–23–1955
Fulton County	1–21–1954
Georgetown	10–16–1954
Hickman	1–20–1954
Hopkinsville	11–17–1955
Leitchfield	11–24–1954
Louisville and Jefferson County	4– 7–1954
Mayfield	9–16–1955
Monticello	7–13–1954
Morgantown	1– 8–1954
Murray	4–29–1954
Newport and Campbell County	10–20–1955
Owensboro	6–18–1954
Paducah	8– 5–1955
Louisiana	
Calcasieu Parish	8–––1954
Lincoln Parish	9–––1954
Rapides Parish	5–––1954
St. Martin Parish	7–––1954
Vermilion Parish	9–––1954
Mississippi	
Brookhaven	3– 4–1954
Clarksdale	10–13–1954
Columbus	3–26–1954
Greenville	9–14–1954
Greenwood	4–19–1954
Grenada	11–16–1955
Houston	6– 1–1955
Iuka	7–19–1955
Kosciusko	8–10–1955
Macon	6–11–1954
Meadville	10–13–1954
Picayune	11– 4–1955
Ruleville	4–22–1954
Vicksburg	7–10–1954
West Point	5–26–1955
Missouri	
Cape Girardeau	8–11–1954
Kansas City	9–13–1954
St. Joseph	6– 9–1955
Springfield	11–25–1954
Nevada	
Ely, McGill, and Ruth	4–19–1955
North Carolina	
Avery County	1–15–1954
Beaufort County	3–31–1955
Bertie County	3–31–1955
Bladen County	6– 6–1955
Burke County	1–15–1954
North Carolina—Continued	
Charlotte	1– 4–1954
Chatham County	4– 5–1955
Craven County	2–12–1954
Cumberland County	1–20–1954
Durham County	7–27–1954
Forsyth County	1–31–1955
Guilford County	6–28–1954
Henderson-Transylvania Counties	2–18–1954
Iredell County	11–17–1954
Lee County	4– 8–1955
Lenoir County	1– 7–1955
New Hanover County	5–28–1954
Northampton County	4–21–1954
Onslow County	5–16–1955
Orange County	4– 5–1955
Pender County	5–16–1955
Person County	4– 5–1955
Pitt County	4–20–1955
Richmond County	2– 2–1954
Rockingham-Caswell Counties	3–12–1954
Tyrrell County	8– 5–1955
Washington County	8– 5–1955
Oklahoma	
Ardmore	4– 8–1955
Bartlesville	3– 8–1955
Duncan	1–19–1954
Guthrie	5–11–1955
Mangum	10–27–1955
Okmulgee	3–16–1955
Seminole	10– 1–1954
Sulphur	2–17–1955
Tulsa	6–10–1955
Oregon	
Klamath Falls	5– 7–1954
South Dakota	
Aberdeen	8–28–1954
Sioux Falls	10–26–1954
Sisseton	8–24–1954
Tennessee	
Athens	8–10–1954
Bristol	11– 3–1955
Chattanooga	12– 3–1954
Clarksville	2–10–1955
Cleveland	10–13–1954
Clinton	4–21–1954
Columbia	5–19–1954
Cookeville	9–21–1955
Covington	11–12–1954
Cowan	10–21–1954

Communities awarded milk sanitation ratings of 90 percent or more 1954–55—Continued

100 PERCENT OF MARKET MILK PASTEURIZED—*Continued*

Community	*Date of rating*
Tennessee—Continued	
Decherd	10–21–1954
Dyersburg	10–29–1954
Elizabethton	2–23–1955
Franklin	5–20–1954
Gatlinburg	10– 6–1954
Greenville	6– 5–1954
Humboldt	6–30–1954
Jefferson City	5–26–1954
Johnson City	9–23–1954
Kingsport	11– 9–1955
Knoxville	8–26–1955
Lebanon	8–27–1954
Lewisburg	6–10–1954
Livingston	1–27–1954
Loudon	5– 6–1954
Manchester	10–21–1954
Maryville-Alcoa	11–23–1954
Memphis	3–25–1954
Milan	6–30–1954
Morristown	5–26–1954
Murfreesboro	7–14–1955
Nashville and Davidson County	10–27–1955
Newbern	10–28–1954
Newport	10– 5–1954
Pulaski	9– 1–1955
Shelbyville	6– 9–1954
Sparta	5– 5–1954
Springfield	7–23–1955
Sweetwater	10– 7–1954
Trenton	6–30–1954
Winchester	10–21–1954
Texas	
Beaumont	5–24–1955
Brownfield	5– 6–1955
Texas—Continued	
Brownwood	7–16–1954
Bryan	8–30–1954
Cleburne	11–19–1954
Dallas	9–29–1954
Denison	6–24–1954
El Paso	10–25–1955
Falfurrias	1–21–1955
Galveston	7–24–1954
Harlingen	1–26–1955
Houston	5–28–1954
Huntsville	12– 3–1954
Jacksonville	12–11–1954
Kerrville	8–13–1954
Kilgore	7–14–1954
Lufkin	3– 3–1955
Midland	1–21–1955
Mineral Wells	12–14–1954
Nacogdoches	9– 3–1954
New Braunfels	9– 2–1954
Odessa	1–21–1955
Orange	5–19–1955
Plainview	11– 2–1954
Port Arthur	6–29–1954
San Antonio	2– 8–1955
San Benito	1– 8–1955
Sweetwater	11–17–1954
Texarkana	4– 5–1955
Tyler	10–22–1954
Victoria	11–24–1954
Wichita Falls	3– 8–1955
Utah	
Ogden	10–18–1955
Salt Lake City	3–30–1954
Virginia	
Bristol	11– 3–1955
Buena Vista	10–28–1955
Front Royal	11–10–1955
Glasgow	10–28–1955
Lexington	10–28–1955
Luray	11–11–1955
Norfolk	5–18–1954
Portsmouth	5–18–1954
Richmond	4–16–1954
Roanoke	8–20–1954
South Boston	3– 8–1954
Staunton	6–25–1954
Suffolk	7– 1–1954
Waynesboro	6–25–1954
Williamsburg	10–25–1955
Washington	
Spokane	9–16–1954
Whitman County	•10–14–1954
Wisconsin	
Baraboo	10–18–1955
Beaver Dam	3–29–1955
Burlington	12– 5–1954
Delavan	12– 5–1954
Elkhorn	12– 5–1954
Fontana	12– 5–1954
Fort Atkinson	12– 5–1954
Green Bay	10– 6–1955
Kenosha	7–14–1955
La Crosse	1–14–1955
Lake Geneva	12– 5–1954
Manitowoc	5–11–1955
Ripon	3–29–1955
Sheboygan	7– 7–1955
Waupun	3–29–1955
Williams Bay	12– 5–1954

BOTH RAW AND PASTEURIZED MARKET MILK

Community and percent of milk pasteurized	*Date of rating*
Florida	
Escambia County, 99.6	6–30–1954
Georgia	
Carroll County, 97.5	3–24–1955
Cartersville, 97.7	1–26–1955
Cedartown, 97.7	11–19–1954
Georgia—Continued	
Gainesville-Hall County, 92.1	5–20–1955
Griffin, 98.2	9– 3–1954
Macon, 99.7	6–23–1955
Marietta, 96.2	5– 4–1954
Newnan, 92.8	7–23–1954
Georgia—Continued	
Pelham, 94	9– 7–1955
Thomaston, 87.4	6–17–1954
Toccoa-Stephens County, 88	4– 9–1954
Washington, 99.7	11–18–1955
Winder-Barrow County, 98.5	3–10–1955

Communities awarded milk sanitation ratings of 90 percent or more, 1954–55

BOTH RAW AND PASTEURIZED MARKET MILK

Community and percent of milk pasteurized	*Date of rating*
Idaho	
Twin Falls, 98.96	4–15–1954
Kentucky	
Henderson, 98.9	9–23–1954
Princeton, 96	5–19–1955
Somerset, 95	2– 7–1955
Missouri	
Moberly, 94.2	3– 1–1955
Poplar Bluff, 97.4	8–18–1955
Montana	
Missoula, 99	11– 5–1954
North Carolina	
Moore County, 93.6	3–12–1954
Robeson County, 96.8	1–11–1954
Oklahoma	
Altus, 94.2	5– 5–1955
Elk City, 99	4–22–1955
Enid, 98	5– 5–1955
Henryetta, 93	3–14–1955
Lawton, 99.2	12–27–1954
McAlester, 79	6–29–1955
Muskogee, 99.6	1–21–1955
Norman, 99	1–27–1955
Oklahoma City, 97.9	11– 4–1955
Ponca City, 94.6	4–14–1955
Shawnee, 98.8	11–18–1955
Stillwater, 97	4–29–1954
Oregon	
Portland, 99.4	7–30–1955
Tennessee	
McMinnville, 90	5– 5–1954
Texas	
Abilene, 98.9	6–15–1954
Amarillo, 99.3	4–11–1955
Texas—Continued	
Austin, 98.6	6–11–1954
Brady, 94	8– 7–1954
Childress, 83.4	4–22–1955
Fort Worth, 99.97	4–28–1954
Gainesville, 95	12– 1–1954
Gladewater, 98.8	7–14–1954
Longview, 99.6	7–14–1954
Lubbock, 99	8–20–1954
Marshall, 91	4–26–1954
Palestine, 95.1	6–15–1954
Paris, 94.8	12– 8–1954
Waco, 99	7–28–1954
Virginia	
Charlottesville, 99.4	10–17–1955
Lynchburg, 98.8	12–1954
Washington	
Tacoma, 99.7	7–16–1954
West Virginia	
Kanawha County, 98	6–25–1954

NOTE: In these communities the pasteurized market milk shows a 90-percent or more compliance with the grade A pasteurized milk requirements, and the raw market milk shows a 90-percent or more compliance with the grade A raw milk requirements, of the Milk Ordinance and Code Recommended by the United States Public Health Service.

Note particularly the percentage of the milk pasteurized in the various communities listed. This percentage is an important factor to consider in estimating the safety of a city's milk supply. All milk should be pasteurized, either commercially or at home, before it is consumed.

International Symposium on Venereal Diseases

The First International Symposium on Venereal Diseases and the Treponematoses will be held at the Statler Hotel, Washington, D. C., May 28–June 1, 1956. The symposium is sponsored by the Public Health Service and the World Health Organization.

This meeting will afford an opportunity for authorities from many lands to exchange ideas and information on developments in research, diagnosis, treatment, and case finding in the venereal and treponemal diseases. The working languages of the symposium will be French, Spanish, and English. Papers will be interpreted in all three languages during the course of the meeting.

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